Electronic Marvels at State Farm Mutual

by Myron G. Willke

ELECTRONIC MARVELS AT STATE FARM MUTUAL

This is a success story of a very important function — data processing — of a very large corporation, the State Farm Mutual Insurance Company. Data processing as it is known today is possible only because of the invention, advancement and enormous acceptance of the electronic computer technology. This book attempts to bring the reader "up-to-speed" with the complexities of data processing by introducing the subject via a relatively condensed history of the invention and advancements of the electronic calculators and computers. This history takes its readers from the very earliest efforts of designing calculating devices to the early electronic computers used initially by State Farm Mutual in 1955.

Data processing at State Farm Mutual was designed originally in 1955 to apply to the record keeping previously accomplished by clerks performing the work manually augmented by the use of early IBM machines identified as electronic accounting machines known as EAM equipment.

The subsequent advancements of electronic computer technology are described in concert with State Farm Mutual's constantly improving data processing systems which required those improvements in computer technology. The advancements are described within this book as six distinct computer eras.

Most importantly, this book attempts to describe the ingenuity and hard work of many individuals both within and outside of State Farm Mutual which hopefully gives it the personal quality desired for this book.

Myron G. Hallke, Author

Dedicated
to State Farm Mutual

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Electronic Marvels at State Farm Mutual

A history of early computers and a comprehensive description of the origin and development of Data Processing at the State Farm Mutual Insurance Company Bloomington, Illinois

by
Myron G. Willke
Assistant Vice President
Data Processing
(Retired)

The events and views portrayed herein are solely the recollections and expressions of the author and are not intended to reflect the views of the management of the State Farm Insurance Companies. Management of the State Farm Insurance Companies has not approved or disapproved the material in this publication.

This book is dedicated to the entire State Farm organization for the opportunities afforded the author and all other Data Processing personnel at State Farm.

Acknowledgments

For more than thirty three years, it was my good fortune to hold positions in one of the great and unique corporations of not only the United States but of the world. This good fortune was further enhanced by the high esteem that this company enjoys throughout the industry and by the universal acclaim of its employees. This high regard is well deserved because of the great support its management provides its employees in the form of an environment that nurtures growth, freedom of expression, satisfaction of accomplishment, and innovation. It was therefore, a unique opportunity for me not only to have been a part of this management team but to have had the opportunity to establish and develop the initial data processing endeavor, along with three other "pioneering" co-workers, Roger Woodrey, John Janes, and James Hickey (deceased).

This book has been written primarily for the sense of indebtedness I owe State Farm Mutual Automobile Insurance Co. and its top management for the extraordinary support it provided me personally and data processing over the years; and, for the unique opportunity afforded me as one of very few data processing management personnel remaining from that "historic" period when the "Electronic Research Unit" was established in 1955. I am referring to the executives who were the prime movers of the data processing effort at that time: A. H. Rust, G. B. Brown, E. B. Rust, Sr. and C. A. Marquardt, all deceased. I am especially indebted to the Board of Directors of State Farm Mutual who on the occasion of my retirement sent me a scroll, which I treasure as much as anything I have ever received, on which is written:

> "In appreciation, be it known that the Board of Directors of State Farm Mutual Automobile Insurance Company at its meeting held December 19, 1980, in recognition of thirty three years of faithful and meritorious service, resolved that Myron G. Willke be accorded special commendation and thanks. On behalf of all his associates, the Board extends to him all best wishes for the future.
>
> (Signed) Edward B. Rust, (Sr.) President."

The objective of this book, therefore, is to provide data processing history that would be of primary interest to those State Farm employees and friends, current and future, who either lived during that period of time or who in the future may be interested in what occurred during those early years. It is not intended to be of general interest to individuals not directly involved with State Farm. If others, find it of interest, I would be extremely pleased.

Special recognition will be given to all of the outstanding executives and co-workers, who have contributed so much to the success of data processing in State Farm, as the story is developed in this book. At this time it is my purpose to express my appreciation to those individuals who have made this book possible and to the nearly two hundred individuals who have contributed vital information without which this book could not exist. At this time, I wish to express my utmost appreciation to Presidents Edward B. Rust, Sr. (deceased), and Edward Rust, Jr. along with Senior Vice President & Treasurer Roger Joslin, and Vice President-Data Processing Dr. Norman Vincent for the moral support and encouragement to write this book.

I would be remiss if special recognition were not given to a number of colleagues, former employees, and retirees who were so helpful in many ways. The foremost recognition must go to five former co-workers who have exerted an extraordinary effort in providing vital and fundamental information for this book. The men deserving this special recognition are Richard Andes, Al Creasy, Ron Kennedy, Kenneth Reeser and Roger Woodrey. These five men continuously provided information so important that it would be impossible to single out any portion of it as being most significant to this effort.

Special recognition is also appropriate for two men who were not employed "directly" by State Farm but were so involved that it is difficult to believe that they were not employees. These men are:

1. Arnold Nygaard, long time IBM Customer Engineer at State Farm. Arnold supplied very important information about IBM personnel and machines which played such an important role in the early years of the State Farm-IBM relationship. Arnold also has a son, David, who is a current and valued member of the State Farm family.

2. Dan Barringer, State Farm Archivist, who is under contract with the State Farm Companies, and who provided ALFI articles and many other sources of information so valuable to this book. In this connection, James Stahly, Jr. also "filled" in admirably when Barringer was not available.

Finally, another very special group of individuals who deserve special recognition are some of our very earliest employees, long retired, who have been so helpful about record keeping information dating back to the period from the late 1920's through the early 1940's. Among them are:

1. Wilma Dooley, secretary to Carl A. Marquardt and later Edward B. Rust, Sr. at the time of her retirement. Wilma gave me many names to contact who could give me valuable information about those early years.

2. Edith Lunsford, long-time secretary to Arthur Eiff. Edith began her career in the Odd Fellows Building and gave me valuable information about that period.

3. Freda Adams, began her career in the Odd Fellows Building as a key puncher and spent much of her career in some type of record keeping employment under Arthur Eiff. In this capacity, Freda's assistance and printed information about that period has been invaluable.

4. Edna Bartholomew, spent her entire career in the Western Office, Berkeley, California. Edna moved to California with Charles Bennett, long-time manager of the Accounting Department in that office. To my astonishment I found her extraordinarily bright and witty at 95 years "young", and when, upon request I told her that I was 70, she said, "Oh, you're just a boy!" Wow! Just a boy at 70?

5. Royal J. Bartrum, retired Vice President, Auto Claims Department. I learned that Bartrum had retained volumes of files collected during his career which were also so extraordinarily valuable to me for the period from the mid-1930's to the year 1955. Furthermore, his notable memory made available to me invaluable information concerning the Plan I and Plan II concepts, both with which he was directly and indirectly involved.

Scores of other former colleagues and current State Farm employees have contributed varying amounts of information which has been valuable in "filling the holes" which would have been quite noticeable except for that outstanding assistance. Those individuals are included in a complete listing of all contributors in Appendix G near the end of the book. Four of those individuals include Al Johnson, Weyland Ginther, Lynn Gray, and Carmen Trenton—all IBM'ers who either loaned or donated books about IBM's remarkable history and the development of its many lines of computers. Al Johnson is the current Business Unit Manager for the State Farm Account.

Much information was taken from the excellent book about State Farm's founder, George J. Mecherle, "The Farmer From Merna" and three very fine books about IBM: "Colossus In Transition"; "IBM's Early Computers"; and, "IBM's 360 and Early 370 Systems". Considerable information was also acquired from the archives of the State Farm library—especially the many articles about data processing gleaned

from the many editions of the ALFI News of past years. The ALFI News is the State Farm company newspaper, named many years ago by Bess Dragoo, C. A. Marquardt's long-time secretary. (ALFI is an acronym for "Auto, Life, Fire Insurance".)

Many thanks also to the gracious assistance of the State Farm librarians, who made much of this information available to me. Credit must also be given to librarians at the Public Library of the City of Bloomington who were so helpful in securing information of a national or international nature. This information was gleaned from many of the books of both libraries concerning computers and other general information which would not have been readily available to me in any other way. All information secured from those books and news articles has been duly and completely referenced in this book.

Many pictures used in this book have been contributed by individuals from their personal files, but most of the pictures were furnished as a courtesy of the State Farm archives.

It is my hope that no one, who contributed to the publication of this book, has been omitted among the acknowledgments herein presented. It is hoped that if an omission has occurred, that my sincere apology for such an inadvertent oversight will be graciously accepted.

Finally, I owe my greatest debt of gratitude to my dear wife, Freda, who had many dinners delayed, appointments changed, and ran errands of all types in order that I could complete this book within the schedule that I had set for myself. Thank you all.

— Myron G. Willke.

Contents

Introduction

This book is intended as an historical documentation of one of the most important elements of the day to day functions and processing of work at the State Farm Mutual Insurance Company—the data processing function. This documentation includes the origin and development of data processing at State Farm over a period of more than thirty five years.

The objective of this book is not to entertain or reveal great surprises. It is intended to provide insight as to the objectives, accomplishments, struggles, and even the occasional failures of data processing from its very beginning to the recent past—an accurate, detailed, and "warm" documentary of the formative years of data processing at State Farm Mutual. It is my sincere hope that it will have accomplished that goal.

Although I have been retired for more than a decade, I have had scores of individuals ask me about various events that occurred, problems and successes encountered, and names of the company executives and employees who dealt with this important function, data processing, during those early years. Since so many of those important individuals, "pioneers" if you will, are no longer with us, I felt it to be a great opportunity, an honor, and an obligation to write for posterity a straight forward, accurate, unbiased documentation of those notable events.

In an effort to assure the reader that this book is an attempt to be absolutely accurate and factual, portraying events as they occurred, I had initially decided to write this book in the third person. I, positively, did NOT want this book to be considered as an autobiography or pseudo autobiography, as it might have appeared, because of my close involvement with the Data Processing Department, and the prominent position the department has attained in the company. However, I was advised that writing it in the third person could result in a "cold" documentary, entirely devoid of the warmth and human appeal that I urgently desired for this book. Hence, I abandoned that approach hoping the reader would keep in mind my sincere objectives and caveats as stated above.

There may be a question in the mind of some readers as to why I waited so long to write this book—ten years after retirement. There were several reasons. First of all, my father's severe health problems and eventual passing took much of my time. Secondly, I needed a business program for my own benefit which would match my special needs. Hence, I programmed my own "Master Business Transaction Program" which required four years with occasional subsequent changes and improvements.

Furthermore, it has required nearly five years of pure research to gather the material for this book plus a couple of months to write and test a computer program which indexed that material to match the outline prepared for this book. Lastly, and most importantly, I knew I would write a much better book after a few years of retirement because it would be written from an historic viewpoint and much less from an emotional or personal perspective.

This book opens with a relatively brief description of the early history of computers because of the obvious impact the invention, implementation, and rapid improvement of computer technology provided toward the initiation and growing importance of data processing. Computerization has enabled data processing to become a very important institution and a basic necessity for most industries, especially the insurance industry.

The second chapter deals with the very important and hopefully interesting brief description of record keeping in State Farm which preceded and ushered in the age of data processing. This early record keeping period, prior to 1955, featured the evolution from hand written bookkeeping methods to the advent of Electric Accounting Machines (EAM equipment) as the precursor of computers.

The next six chapters describe the all-important six eras of computerized data processing at the State Farm Mutual Automobile Insurance Company covering the period from the creation of the "Electronic Research Unit" in 1955 to the current period. These chapters cover the fascinating story of the changes and growth of data processing in the company during this short time frame of thirty five years.

It is important to emphasize here that the treatment of Era VI, years 1981-1990, will be relatively light since it pertain to an era of which I had no personal involvement because of my retirement in 1980. My purpose of including Era VI is merely to make the book complete to the date of writing this book in 1990.

Era VI is explained in Chapter VIII based on information which was readily and kindly supplied by former colleagues. The primary thrust of Chapter VIII, however, is to concentrate mainly on the data processing philosophy of that "Era of Sophistication" ably enunciated by Darrel Kehl, Vice President-Data Processing and Roger Woodrey, Asst. Vice President-Data Processing-both to whom I am deeply indebted.

This is followed by the Appendices involving separate subjects, which are best handled in their entirety in this manner. Appendices A through D merely consolidate information already presented in various chapters of the book whereas appendices E through F are either entirely new or include new information.

This book describes primarily the data processing history of the State Farm Mutual Automobile Insurance Co., but does include some data processing history of the State Farm Fire Co. after 1964, when the initial stages of consolidation of the two Data Processing Departments into one department began. Events involving the State Farm Life Insurance Co. data processing activities are mentioned rarely—only when there was some logical connection with a subject being described for the Auto Company or prominently featured in an ALFI article of that time. There were very few instances of that nature.

Inasmuch as this book is intended to apply almost exclusively to State Farm Mutual, it is important for the reader to interpret the many references to State Farm as being synonymous with State Farm Mutual Insurance Co. in an effort to avoid wordiness and redundancy. This caveat is mentioned to avoid the implication that the use of the words "State Farm" in intended to be all-inclusive of all State Farm companies. When the Fire or Life Companies are to be included in the reference, they will be explicitly named or clearly implied.

Luckily, I have not had to rely entirely on my memory for the information written in this book. I was able to save a full 5-drawer cabinet of files, booklets, memoranda, and other information upon my retirement, which helped the refreshment of my memory extensively. In addition, for more than 55 years, I have written each day's principal occurrences in a personal diary which fortunately has proven to be a virtual history of data processing at State Farm Mutual. Equally important are the pictures, clippings, articles, and other information, supplied by the many contributors mentioned earlier in the acknowledgments section, which has made it all possible. To my surprise, many informational items which were in those documents differed from what I, and even what some of my colleagues, remembered. However, be assured that I used the information in the written documents when that occurred.

In writing this book, some very important objectives were established which it is hoped were achieved. These were:

1. Absolute accuracy as a primary goal. When there was some uncertainty of the accuracy of the information, sometimes hours were spent checking alternative sources of information to assure accuracy. Should some errors, omissions, or misinterpretations become evident despite this effort, it is hoped that the reader will realize that they were entirely inadvertent and therefore will be kindly overlooked.

2. First names or titles, such as "Dr." or "Vice President", will be used when the individual is first introduced but only the last name will be used thereafter unless a more detailed distinction is necessary.

3. Accentuate the human interest aspect of data processing or at least equate it with the technological mystique of computers, which has a natural and inherent impact. To reinforce this objective, the reader will note the many individuals who have been named for their unique achievements. You will also notice the references to the outstanding effort and many sacrifices in terms of long hours, lost weekends, and stressful circumstances endured by those early "pioneers". It was those attributes which in large measure have allowed data processing at State Farm to achieve the great acceptance it enjoys today.

4. Moderate any tendency on my part to become too technical—a "trap" into which I could easily fall. Obviously, to give credibility to a subject so interwoven with computers, there is a need for essential technical references required to describe the computers and transaction processing used in any data processing environment. I have placed emphasis on my desire to keep all technical discussions at an essential minimum. However, it is my intention to provide insight into the technologies with which we dealt for those individuals who have expressed special interest in that aspect of our efforts.

5. Stress the unstinting support ALL levels of management gave to the data processing effort throughout all eras described in this book. That support extended from the president on down throughout all companies and departments in the corporate headquarters. Perhaps the support appreciated most was that of the regional offices, which often had to "endure" as well as "benefit" from the data processing product. This support often was extremely crucial to the success of the data processing tasks which often encountered severe problems over the years.

6. Written primarily for the benefit of State Farm colleagues and friends. If others outside of the State Farm Family find this book interesting and of value, then it has happily fulfilled more than my basic objectives.

Finally, a distinct effort was made to recognize the major personnel and management changes which occurred during the early years, especially from 1955 to 1972. After 1972, the department simply was too large to continue to document those changes. However, you will find some of the key organization charts of data processing management over the various eras among the appendices at the end of the book. That information along with the recognition and explanation of the different eras of experimentation, growth and stability, hopefully will make this book both interesting and an informative historical reference source of the origin and accomplishments of data processing at State Farm Mutual.

CHAPTER I

Early History of Computers

Nearly everyone old enough to read this book, knows something about computers—what they look like, what they do, and the impact they have on our lives. That is, if we have not been hibernating in a cave for the past fifty years. But, do we really know computers? Even though we live in a sophisticated society, do we really know what computers are? Yes, we have read about them in magazines or newspapers. We may have learned about them in school. Often we have seen them advertised on television. We have seen them displayed in shopping malls. We may even have one in our home on which we play games. We may even use them at our place of work in the form of terminals which themselves are either a computer or are connected with a central computer. But do we really know what a computer is?

Before we can fully appreciate the fascinating story of the invention and early history of computers, let us define what a computer really is and what it is not. Before the invention of the modern computer about 50 years ago, the adding machines, comptometers, accounting machines, and other mechanical devices which could add, subtract, multiply and divide, whether hand operated or electrically powered, were often described as computers by those operating these machines at the time. Nevertheless, they were not computers.

The "fundamental" characteristics that differentiate a computer from a calculator are its ability to handle logic and a memory which enable it to retain mathematical and operational rules and data. It has the ability then to apply those rules logically to the data already in the memory and to request more data or emit solutions as a result of making those logical decisions. It is this ability that is at the heart of a computer.

The modern computer then is almost an "electronic brain" with the capacity to make decisions, perform extremely fast calculations and manipulations of data within its memory; and, the ability to store and alter "programs", which are the stored instructions within its memory. These abilities enable the computer to perform and accomplish its tasks. To these attributes must be added the capability to enter, edit, rearrange, and emit data, verbal documentation, and graphics on printed paper, video monitors, magnetic tapes, flexible or hard disks, punched paper tape, and to send these emissions via high speed teleprocessing and satellites any where in the world almost instantaneously. It is not a true electronic brain because it cannot think in terms of the ability of a human brain—at least not yet!

These basic yet phenomenal capabilities along with improvements which will be explained later, made the modern computer an extremely powerful tool which has propelled data processing into the prominent position it has attained in the business world during the latter half of the twentieth century.

Why it is important to know about the history of the development of the modern computer? It is my carefully acquired belief that the modern computer has had as great an impact on 20th century civilization as any other occurrence in this century. It certainly ranks with the promulgation of the Theory of Evolution, the development of the atomic and nuclear bombs, improvements in travel, the impact of rocketry, and other equally amazing discoveries of the 20th century. Arguably, some may be more important than the computer, but what convinces me otherwise is that most of the recent inventions, excursions into outer space, development of modern medical techniques, vast improvements of modern climatology, probes into the depths of the oceans, implementation of robots in manufacturing, acceleration of communications worldwide, and the phenomenal abilities and accuracy of the modern weapons of war, i.e. the Gulf War are chiefly the product and result of computerization. These and many more examples absolutely would not be possible without the modern computer—to say nothing about the impact it has had on data processing.

Having established its important role in our lives, let us see how this amazing tool came into existence. The first primitive device used to aid computation was the abacus, which performed arithmetic calculations on a tablet, later a frame, with wires or grooves on which beads were used as counters. The abacus was used extensively in China and Egypt prior to the Christian era, but also was used throughout the various countries making up the ancient civilizations. Variations of the abacus were used in the Roman Empire, medieval England and other ancient countries. In ancient England, a checkered table cloth was used to position the buttons or stones as counters and from which the modern British Exchequer derives its name. The abacus is still used in a limited manner in the hinterlands of China and Japan today.

The first real calculating machine was invented in 1642 by the French scientist, Blaise Pascal. He was noted primarily for his theorems of projective geometry[1]; proved by experimentation that the level of mercury in a barometer is determined by atmospheric pressure not by a vacuum; and, along with Pierre de Fermat, formulated the mathematical theory of probability.[83]

The next important advance in calculating machines was the invention by Wilhelm Von Leibnitz of a calculator in 1672 which could perform operations in multiplication, division, and the extraction of square roots. Baron Leibnitz was a famous German philosopher, mathematician, and statesman noted especially for his outstanding contribution to the discovery of the principles of infinitesimal calculus.[1] This system was contrived independently of Newton's system of calculus in 1666.

Other attempts to assist computation over the next two centuries proved fruitless until Charles Babbage established the basic components for computers as a result of his life long work on his "Analytical Engine" in the 19th century.[1] He was born in Devonshire, England on December 26, 1792. He studied at Cambridge University, but left early because he felt he was substantially ahead of his tutors at the time. He taught himself mathematics and organized the "Analytical Society" and built the "Difference Engine" before he advanced to his "Analytical Engine" which he designed in 1820. Babbage, who spent much of his life as a consultant, died in 1871. Although he was never able to complete his model into a flawless working calculator, his work and the theories he espoused were to be studied seriously by those who later set out to improve upon his invention.

Other fringe inventions that helped to augment the efforts towards building calculators occurred in the latter half of the 19th century. Keyboard calculators, although quite primitive, were developed in the USA in mid-century. In 1887, a machine that performed multiplication by a direct multiplier rather than by repetition was perfected by Leon Bollee. Within a few years the Hollerith punch card method of storing data was developed as the forerunner of the IBM punch card as we know it today.

During the late 19th century and early 20th century, the most significant event which helped the emergence of the modern computer as it is known today, was the invention of the Hollerith Tabulating Machine, which became famous for its tabulation of the 1890 census.

This machine was invented by Herman Hollerith, an instructor at the Massachusetts Institute of Technology,[2] MIT, in response to an enormous task facing the country, the 1890 census. It appeared that the 1880 census would not be completed for seven or eight years and such a result for the 1890 census would be intolerable. There simply would not be enough clerks, or housing for them, to accomplish this task under the 1880 census methods. Hence, Hollerith's great opportunity, and he pursued it with great interest and energy. To pursue this to the "hilt", he left MIT and took on a variety of jobs to support himself and his project. Hollerith espoused the concept "half of the art of invention consists of knowing what needs to be invented." That certainly was the case of the 1890 census. Although he had competition for the Census Bureau contract, he won that contract and contracts with other foreign countries which also had census needs. As a result of his fame from the 1890 census, other industries with needs for tabulating statistical data, notably the railroads, became interested in his tabulating machines. Hollerith placed machines with the New York Central and Long Island railroads. Other orders followed.[2] These machines opened up a new business, that of providing Hollerith punch cards which were now being used by the millions. In 1896, he incorporated as the Tabulating Machine Company and won the 1900 census contract. By 1908, his company was prospering in grand style—selling and renting his machines as well as a huge card business. His business had expanded into electric utilities and many smaller businesses and was booming.

By 1910, the Tabulating Machine Company needed both an infusion of capital and innovative talent. It came in the formation of a new company created by Charles Flint that included a triad of 3 companies with diverse interests: computing, tabulating, and recording and therefore became known as the Computing-Tabulating-Recording Company or CTR. Hollerith's Tabulating Co. was the tabulating part of the new company and Hollerith was named the chief engineer.

Enter Thomas Watson, Sr., and IBM

Enter Thomas J. Watson! In May 1914, after a stormy stint with the National Cash Register Company, he was fired by NCR's president, John Patterson. Prior to his firing, Watson had been found guilty of violating federal law. At the time of his hiring with CTR he was still under an indictment and faced the prospect of going to jail. He was never convicted, never went to jail, had a fine reputation with his peers and proved to be a great asset for the CTR corporation. We will come back to his meteoric rise in CTR that led to IBM, but let us first discuss his important experience at NCR.

Although Watson's employment with National Cash Register was stormy, it was a solid foundation for his future employment at CTR and eventual establishment and control of the future IBM Corporation.

Watson joined NCR in 1895 as a 21 year old who was highly ambitious, intelligent, earnest, and highly disciplined. He was both fortunate and unfortunate to be placed at that early age in an environment run by the autocratic Patterson, who ran NCR with an iron fist. Watson was fortunate because Patterson saw something special in Watson and treated him that way. He was unfortunate because eventually he was asked to do things which were deemed illegal by the courts and although reversed by an appeals court, it led to his final estrangement from Patterson and dismissal.[2]

Briefly, a court battle emanated from an antitrust suit brought by American Cash Register Co. charging multiple violations of the Sherman Antitrust Act. It stemmed from Patterson's mode of operations, trying openly to drive all competition out of business. It had virtually done so and was now targeting the American Cash Register Co., its main competitor.

Watson was included in the suit as Patterson's top salesman and cohort in this affair. Watson always protested that he had done nothing illegal. Nevertheless, the federal government brought this suit, with the verdict that Patterson and Watson were both fined $5000 and a year in jail. Nature stepped in and saved them both.

Dayton, Ohio, home of NCR, was hit by one of the worst floods in American history. Patterson took charge of the relief efforts with contributions of great resources and energy provided by Patterson and his company. This resulted in congratulations from both Governor Cox of Ohio, and President Woodrow Wilson. President Wilson also urged a pardon for his humanitarian efforts. The ultimate result was that the court of appeals handed down a decision that the original indictment was flawed and ordered a retrial.

As a result of this fortuitous situation, neither Patterson nor Watson were ever given a retrial. Soon thereafter, differences in sales strategies and other problems led to Watson's ouster at NCR. It was reported that Watson probably would have been dismissed anyway because Patterson would never permit the reputation of a subordinate to rise above his own and thereby become a challenge to his position.[2]

In 1914, as Watson left NCR, he vowed to build a business some day larger than Patterson's NCR, which he did, and, ironically he did it using many of NCR's concepts. Watson, in effect, remained an "NCR man" the rest of his business career.

His reputation by now, at 40, was widespread and he was hired by CTR. CTR represented the triad of:

Computing—Watson from NCR.
Tabulating—Hollerith from Hollerith Tabulating Company.
Recording—George W. Fairchild from International Time Company.

Although Fairchild was CTR Chairman of the Board, and Herman Hollerith of Hollerith Tabulating Co. fame was chief engineer, Watson, after only one year, 1915, increasingly took charge of the staff although deferring to Fairchild as to matters of company strategy. He cleverly and slowly placed his own men in important staff positions which ultimately led to his control of CTR. He did this by building a sales staff patterned after NCR and pushed research and development of new products which was also an NCR attribute. Always an aggressive leader, he ultimately replaced Hollerith as president of the Tabulating Company—one part of the triad—while assuming the position of general manager of the entire corporation.

Watson, ever the great salesman and promoter, expanded all facets of CTR with the Tabulating Company showing the greatest growth during the war years 1914-1918. By 1919, because of the aftermath of the war, cost cutting became necessary. However, due to the retrenchment stemming from the recession of 1920-1921, businesses increased their orders for tabulating equipment as an economy measure for them. By 1922 the tabulating end of the CTR's operation boomed while the remaining devices were foundering. Watson therefore, cut back on resources for International Time and Computing Scales—two of the fringe operations of CTR.

This trend continued until 1924, when Fairchild died and the Board of Directors named Watson,[2] Chief Executive Operating Officer. Watson never liked the name CTR, especially since its revenue was coming primarily from the Tabulating Company activities. He changed the name to International Business Machines and IBM was soon to become a household word worldwide.

The decade of the 1920's were boom years and his tabulating equipment gradually became known as Electric Accounting Machines and were the principal product while still maintaining the Computing Scales and International Time operations. During the early 1930's, Watson slowly sold most of the fringe operations so that after 1933, IBM was basically a business machine company even though it retained the time keeping element for many years and the typewriter business until recently.

IBM purchased the Pierce Accounting Machine Co. along with its patents including the alphabetical device which meshed well with IBM's own numerical machine. In 1932 it introduced the IBM 1405 Electric Accounting Machine. This new product, which became the workhorse of the industry throughout the 1930's, along with its line of sorters, collators, key punches, typewriters, and other equipment enabled IBM to become by 1939 the largest and most powerful business machine corporation in the USA.

Evolution of Modern Computers

The really intensive efforts toward the invention and evolvement of modern computers took shape in the decade of the 1930's, not necessarily by IBM, concentrating generally on mathematical models rather than towards business-oriented needs. Vannevar Bush, an American electrical engineer, built the first Analog Calculator in 1930. The first electronic computing device was constructed by John V. Atanasoff. (Note that I have differentiated between a calculator and a computing device as explained fully later in this chapter.)

Emphasis toward business needs changed with the grants from IBM and work by Burroughs, and others existing at the time. IBM provided the Columbia University Statistics Bureau thousands of dollars, which enabled scientists such as Wallace Eckert, not Dr. J. Presper Eckert, co-inventor of the UNIVAC, to adapt one of the rather cumbersome tabulator-accounting devices of that era into a calculator which was an electromechanical device capable of solving problems that were fed into it by IBM cards. Its capability was severely limited.

It was in the year 1940 that IBM, through the effort of Thomas Watson in the form of IBM grants, and the coincident parallel needs of the armed forces for World War II, gave impetus to two very important research projects which led eventually to the building and unveiling of the MARK I in 1943 and the ENIAC in 1945.[84] The MARK I was built by Howard Aiken in the IBM laboratories for Harvard University. It was then moved to the university where it was dedicated and housed. The ENIAC was built at the Moore School of Electrical Engineering,[2] University of Pennsylvania, for the Army Ordnance Department. The MARK I contributed greatly to the war effort whereas the ENIAC was completed too late to do much for that effort.

These were, by far, the two most important early research efforts that led to the overwhelming importance of the computer as we know it today. Although, we will concentrate our discussion on the development and influence of those two pioneering projects and their successors, we would be remiss not to mention some other key projects of that era which helped advance the state of the art. The more notable projects included the Selective Sequence Electronic Calculator, or SSEC. The SSEC was a cooperative effort between IBM, Columbia University and Wallace Eckert, the principal designer. At Princeton, John Von Neuman was developing the EDVAC, which was to aid the Atomic Bomb Project.[3] It was the first to use the stored-program concept in the USA but the honor of being the first computer using that concept was the Cambridge University machine called the EDSAC.

Other computers which were built in this era were the BINAC, also built by Eckert-Mauchly; the JOHNNIAC which was assembled by the Rand Corporation in California; the SEAC and SWAC built by the Institute of Numerical Analysis; and, the BOMBE and COLOSSUS built in England. None of these ever received lasting fame or fortune.

At MIT, the brilliant Jay Forrestor was working toward the completion of specialized military computers. Jan Rajchman, at RCA, was working on a special military computer to aid in the aiming of guns. All of these and others were important at the time, but none reached the significance of the MARK I or the ENIAC. This was true because from the MARK I, indirectly, emerged the eventual long standing success and pre-eminence of IBM and its computers, whereas from the ENIAC, emerged the first computer directed at the commercial market—the UNIVAC I.

ENIAC—First Electronic Computer[49]

The Mark I, originally named the Automatic Sequence Controlled Calculator, became the first high powered electronic "calculator" whereas the ENIAC, originally named the Electronic Numerical Integrator and Calculator, became the first high powered electronic "computer". Note that they both originally were named "calculators", but because of the significant differences in the basic design in line with definitions to be explained later, history identifies the MARK I as a major electronic calculator and the ENIAC as a major electronic computer.

Although the MARK I became famous for some extraordinary mathematical calculations, most scientists do not consider it as a modern computer at all. Why? Because it was a very large electromechanical device with many huge storage counters as its memory, mechanical multiplying-dividing units, and many other electro-mechanical units for data input and output. That made it a calculator, not a computer.

The first truly modern computer was the ENIAC. The very important difference was that the ENIAC was the first real ELECTRONIC computer, with huge high speed vacuum tubes instead of slow electromechanical relays, magnetic memory storage rather than mechanical counters, and most importantly electronic circuitry to handle "logic" which is the foremost capability that separates the modern computer from a mere powerful calculator such as the MARK I.

The ENIAC, built at the Moore School of the University of Pennsylvania, was the design of Dr. J. Presper Eckert, an electrical engineer and Dr. John Mauchly, a physicist. As a result of this effort, Eckert-Mauchly have for decades been considered the inventors of this first truly modern computer. But, in recent years a "monkey wrench" has been thrown into this claim because in 1973, as a result of an historic court case, John V. Atanasoff[51] has been declared the legal and actual inventor of the modern computer.[3]

For years after the court judged Atanasoff as the inventor, most encyclopedias did not fully recognize him as the true inventor since he did not have the funds to build a FLAWLESS working model embodying his concepts. But in recent years, the Encyclopaedia Britannica has seemingly ended this debate by recognizing Atanasoff unequivocally as the absolute inventor of the modern computer.

It may be of interest to summarize some of the details surrounding the visits and communications between Mauchly and Atanasoff which transformed an originally warm relationship into an ultimate nasty relationship culminating in the court decision in favor of Atanasoff. Mauchly originally visited Atanasoff at Iowa State University on June 13 or 14, 1941. The exact date is uncertain.

Atanasoff's machine was given the identification "ABC" for the Atanasoff-Berry Computer, thereby reflecting on one of the most famous engineering teams in history—Professor Atanasoff and graduate assistant Clifford Berry—who collaborated on the building of the ABC computer. The ABC was never completed.

This visit initially resulted in a warm relationship with many letters exchanged discussing the details of the Atanasoff approach to computing including his use and theories of the vacuum tube and his dissatisfaction with the tube.[3] There were no input or output devices on the ABC. Input was accomplished by tapping its terminals with a negative electrode. Negative charges represented 1's and uncharged condensers were read as 0's.

This ABC prototype thereby was the first to use binary arithmetic and condenser memory. This concept became the basis for the later court decision that the ABC prototype was the first electronic digital computer ever built.

As a result of his visit and communications with Atanasoff, Mauchly became somewhat puzzled about the ABC, its limited capabilities, and the fact that it never became a fully operational system. This, plus differences in their view of how many of the ideas were those of Atanasoff and how many those of Mauchly, because of their many communication exchanges over the years, resulted in the famous court case of 1973.

Because of careful research, in this book we will recognize Atanasoff as the inventor, but will discuss the work of Eckert-Mauchly inasmuch as they did build and perfect the first Electronic Computer, the ENIAC, followed by the UNIVAC I, which these two inventors built as the first commercially marketed computer. All previous electronic calculators or computers were either funded and/or built for different agencies of the federal government or for universities.

When Dr. Mauchly began advancing the idea of a coming age of electronic computing, almost all scientists except a then-graduate student, J. Presper Eckert, were nay sayers. The soon-to-be Dr. Eckert agreed it was possible, hence the formation of the Eckert-Mauchly team which designed the ENIAC as the first all-electronic computer.

While building the ENIAC many unusual problems were encountered including a lack of parts never before designed or built, risk from the possibility that one of its 17,000 vacuum tubes could fail and bring down the whole computer, and the difficulty of building a very complex system with simplicity of design, construction and operation as its goals. Furthermore, the hush-hush nature of their work,[3] because they were working in a wartime environment, caused considerable inconvenience. The ENIAC was finally completed at a cost of $400,000, which is over $10,000,000 in today's dollars, and placed in operation in 1945.

It was too late to be of value to the war effort but its first task was to solve a long and complex calculation involving the nuclear bomb. The details of the task and outcome of the ENIAC contributions are classified.

ENIAC, built for scientific calculations, became an historic success. Besides the nuclear bomb project, it was moved to the Aberdeen Proving Grounds, and after solving the operational problem of burning out tubes by leaving it on continuously, it worked extremely well. On one occasion ENIAC solved a problem in an hour that required a year of work by two women using desk calculators whose assignment was to prove the accuracy of the ENIAC calculations. That was an historic milestone in the evolution of electronic computers.

After 10 years of nearly trouble-free performance,[4] it was working well when it was completely dismantled and the patent assigned to the Sperry Rand Corporation, successor to the Remington Rand Corporation.

Although Eckert-Mauchly had trained their sights on the commercial market in the late 1940's, there was no great interest shown by IBM, nor Burroughs, nor others for such large scale commercial computers. In fact, it was believed that a mere handful of the then "monstrous" machines would be needed in the entire commercial world. To the eternal credit of Eckert-Mauchly, they continued their quest for funding commercially built computers while continuing to complete their work on the ENIAC at the University of Pennsylvania.

About this time Eckert-Mauchly were no longer needed at the U. of Pennsylvania—the World War II needs having been diminished. Now that peace had arrived they along with other scientists on the ENIAC team sought jobs in the commercial world. Both IBM and Remington Rand, then the second largest in the business machines industry, were interested in Eckert-Mauchly as was John Von Neumann, who was putting together a brilliant team at the Institute for Advanced Study at Princeton. This Princeton team eventually became the Neumann-RCA team that built another computer called the EDVAC. The EDVAC, which pioneered the use of the stored program concept, never became a significant force in the computing world.

Both Eckert and Mauchly, by now a staunch team, turned down both IBM and Von Neumann—they did not like the tight reins imposed by Thomas Watson, Sr. or Neumann—and decided to venture into the commercial world on their own terms, establishing the first firm devoted entirely to computers, the Electronic Control Corporation. This company initially had "rough sledding" but managed to survive as a result of a contract with the Census Bureau, signed in April 1946.

Strangely, in the late 1940's, Thomas Watson, Sr. differed from Eckert-Mauchly in their views as to the future of computers in the commercial world. Mr. Watson and some other business machine executives felt it was a limited future and hence pursued this course tentatively while Eckert-Mauchly were willing to wager their future with the future of computers in the commercial world. Obviously, history has emphatically proven them right.

After the Census Bureau contract, Electronic Control Corporation found new orders hard to come by and as a result Eckert-Mauchly changed the name to the Eckert-Mauchly Computer Company. Their reputation had reached new heights and they hoped the name change would open the door to new contracts. They needed new funds in order to build what was really their major goal—the building of the UNIVAC.

Unfortunately, the name change was of no great help. Help did arrive in the form of two successive infusions of capital. First, the American Totalizator Corporation, a builder of parimutuel machines, invested

$500,000. This gave the building of the UNIVAC strong impetus, yet it was insufficient. When Henry Straus, the moving force behind the American Totalizator was killed in an airplane accident, that company lost interest and unloaded this burden.

Meanwhile, despite their economically troubled company, Eckert-Mauchly continued to build the UNIVAC, selling potential buyers on the virtues of their promising computer. Suddenly their fortunes changed handsomely as they caught the attention of James Rand of the Remington Rand Corporation. Remington Rand had just released a new line of calculators and were interested in expanding their product line with this promising new computer—UNIVAC.

At this time in the late 1940's, Eckert-Mauchly were convinced that this computer could revolutionize the upcoming 1950 Census in much the same manner as the Hollerith machines did for the 1890 Census. The result was that orders came in for six more computers even though the UNIVAC was a year away from completion. Each had a price tag of $1,100,000. Despite the fact that "experts" at the time estimated the total market for such computers was only about a dozen or a few more, the Remington Rand Corporation[2] bought 95% of the stock and took control of the entire UNIVAC project. Rand then purchased the remaining 5% of the stock, increased the investment in research and development and became immersed in this very "heady" climate.

UNIVAC and its Impact[19]

With UNIVAC being the first to brave the commercial market, let us examine why it was such an historic venture in the 1950's. It was the first electronic computer DESIGNED to meet the needs of the commercial world rather than the needs of the War Department, known today as the Department of Defense, and the academic world. The chief difference is that the initial needs were directed primarily at enormous mathematical calculations whereas the commercial market dealt with great amounts of data, input and output—hence the term "Data Processing". Although the UNIVAC was an enhanced ENIAC with many of the same characteristics as explained earlier, it was much more powerful and had a number of devices that were especially beneficial for commercial users.

Among these devices were magnetic tapes that could store numeric, alphabetic, and symbolic information and which could be transferred from memory onto the tape or read from the tape and transferred to memory in blocks of 720 characters of information at one time. This was done at the rate of 10,000 digits or characters per second—an astonishing rate of speed at that time.

It had a memory capable of storing 12,000 characters, which today seems very small but in the 1950's seemed enormous. It also had the very important capability of checking its own operations for redundancy and accuracy. Considering its exceptional speed for handling enormous amounts of data for the commercial market which demanded precise accuracy, that may have been its greatest attribute.

Among its special devices were data input and output units attached directly to the system. The slowness of these devices along with the rather large water pipes and quantities of water required by the system for cooling purposes were its two most unattractive elements. These elements, in addition to its high purchase price in excess of $1,000,000 and no option for rental, were seen as liabilities by a number of potential customers including State Farm. Later it had the ability of writing directly onto tape but the water cooling requirement was never solved for the Univac or any system using that or similar technology until the advent of the transistor and solid-state circuitry.

I personally had the opportunity to examine, in Philadelphia, one of the early versions of the UNIVAC at an exhibition directed personally by Drs. Eckert and Mauchly. The organization and location of that exhibition was nothing less than "terrible". It was held in a large, dark, empty warehouse behind the Connie Mack Baseball Stadium. No one met me even though they knew I would be there at an appointed hour representing State Farm. To say the least, that did not impress me. Ultimately, I met them both and received a courteous and thorough briefing. Obviously, they were quite busy, which I thoroughly understood, but I felt someone should have met me to explain their delay, rather than expect me to wander around wondering if I would ever meet them.

It was a relatively large and heavy machine because of those large water pipes needed to keep the huge vacuum tubes and other devices cool. Therefore, it required a fairly large room merely to house it. As I remember it, perhaps wrongly, with the configuration used for this demonstration, it required floor space of about 30 feet by 30 feet or more. Yet its total computing power and subsidiary capabilities were far inferior to the capabilities of the personal computers that many of us have in our homes today.

Despite its size and original price tag, to say nothing of the costs of operating it, it was the most exciting computing equipment existing at the time. Remington Rand Corporation was not as strong financially or otherwise as powerful as IBM, but it had the opportunity to give IBM some "restless nights". It blew its opportunity!

Throughout its history, the UNIVAC project had difficulty securing sufficient funding.[49] This resulted in the late delivery of the first UNIVAC I in March 1951. Despite its early problems, it was considered a great success story.

UNIVAC I immediately made a major impact on the 1950 Census taking over the major portion of the processing of work, being capable to assume much of the work other machines in the Census Bureau could not handle as readily, and replaced many other machines—ironically, some were IBM machines. It appeared that Eckert-Mauchly had things all their way replacing some IBM machines as Thomas Watson had done decades earlier when he replaced Hollerith machines.

The UNIVAC I became instantly famous during the night of November 4, 1952 when it was the very first major electronic computer to be used for the counting of votes and the prediction of results ahead of the actual final vote count.[49] This computer was leased by CBS NEWS and had been the first to predict a landslide victory for Dwight Eisenhower over Adlai Stevenson, but it later pulled back from that prediction until 11:10 PM, E.S.T. During that same night, a robot called "Monrobot", produced by the Monroe Calculation Machine Co., claimed the title because it stayed with its similar prediction all night. Thus, this small computer "Monrobot" was "out-gunned" by UNIVAC by a ratio of 8 to 1 but was not "out-smarted".

It remains a very memorable night. At 9:00 PM, E.S.T., UNIVAC predicted an Eisenhower landslide before the west coast polls had closed. CBS NEWS withheld the prediction because it could not believe its own computer and held back this result. Remington Rand scientists, hired by CBS, changed the programs periodically to make the results come closer to the "human assumptions" until at 11:10 PM E.S.T. with odds of 100 to 1, they went with the computer findings. This should have been done at 9:00 PM and it would have made additional history! CBS NEWS was so shaken by its back tracking, when it could have been heroes, that later that night Edward R. Morrow commented,[49] "The trouble with machines is people".

Nevertheless, on that night UNIVAC made an enormous contribution to history and made the term "computer" famous. This set off such a surge of competition among computer manufacturers that the next few national elections became as much of a contest of the computers as it did among the networks which leased them, to determine which could predict the outcome accurately first. Much of this remains with election reporting to this day.

It was about this time when the Remington Rand Corporation began "fumbling the ball". In 1952, Remington Rand began a period of expansion by securing the relatively small computer firm located in St. Paul, Minnesota, Engineering Research Associates,[49] which had contracts with the Air Force. The Remington Rand Corporation having neither the capital, the management expertise, nor the sales savvy of an IBM, continued to weaken its financial position further by entering into other unrelated ventures. This severely blunted its thrust into the large computer market for which UNIVAC I had been designed and built.

The major competition that UNIVAC faced, in addition to IBM, was the Burroughs Corporation, also a very well financed and formidable competitor of that time. Despite those weaknesses which would haunt Remington Rand severely in the future, nevertheless, in the early 1950's it was in the position to become the undisputed leader of the computing world and possibly could have dealt IBM a fatal blow. Thus, for a few short years Remington Rand with its UNIVAC was the leader in this new technology—the modern Electronic Computer.

By 1955, while it was busy trying to catch UNIVAC, IBM was holding its customers mainly with the much smaller System 650's and working hard with its 700 Series—the 701,702 and then the 705, which was the first IBM computer that could realistically compete operationally with the UNIVAC. Nevertheless, in 1955, according to Robert Sobel,[2] noted business author and writer, "UNIVAC was as close to being a generic term for computers as XEROX would be for copying machines a generation later". By August 1955, there were more UNIVAC's installed or on order than IBM System 700's. At almost that precise moment in history, IBM priced its System 705 to undercut the costly UNIVAC and thereby avoid the fate that befell NCR, in 1920, when it failed to take advantage of its overwhelming lead in the Cash Register business.

Within one year, by the end of 1956, UNIVAC had lost its commanding lead when its number of installations slipped to 46 versus 76 for IBM's System 700's and orders had fallen to 65 versus 193 for IBM. This was the beginning of the end for an heroic effort on the part of the Echert-Mauchly team which had such great promise only two years earlier. (I personally remember that period vividly, and it appeared that UNIVAC left the "minds" of most business organizations almost instantaneously except for those who either already had installed a UNIVAC computer or were about to do so.)

In 1955, Remington Rand merged with the Sperry Corporation which resulted in the formation of the Sperry Rand Corporation.[49] This appeared to be a very good match since Sperry had superior technological expertise while Rand had a better foothold in the business equipment market. At the time of the merger, computers were considered a small portion of the total sales of the business equipment industry.

Sperry Rand Corporation continued to sell UNIVAC computers in diminishing numbers compared to IBM and ultimately became irrelevant. This was not because of an inferior product or a lesser technological base than IBM but because of a much inferior sales base and sales force. IBM had built this superior sales position via its overwhelming lead in the field of Electric Accounting Machines and other business machines.

Meanwhile, according to Warren J. Mitofsky, retired executive of CBS NEWS, New York, the Census Bureau continued to use one of its UNIVAC computers as late as 1965. Mr. Mitofsky, who spoke to me by phone recently, also remembered that one of the two remaining UNIVAC's at the Census Bureau was sent to the Smithsonian Institute in 1963. This information was corroborated by David Allison, curator, Information Age Exhibits, Smithsonian Institute, who said that all but the Console of the UNIVAC I, at the Institute, did come from the Census Bureau in

1963. The Console came as a gift from the Life & Casualty Insurance Co. of Tennessee. The portion from the Census Bureau included the Name Plate on which was inscribed the Census Bureau name and the 1963 date. It resides there to this day—hailed as the very first operating Electronic Computer built for commercial purposes—thereby ending the first chapter of electronic computer history.

IBM Regains Its Prominence[50]

Earlier it was pointed out that one of the two early major computer projects was IBM's building of the Harvard University MARK I electronic calculator—it was not a true electronic computer. Nevertheless, it was a forerunner of calculators and eventually computers that would make IBM the Goliath of the computing world as it already was of the Electric Accounting Machine world. However, let us review a little of the history of the IBM Corporation and in the process discover not only how IBM became so dominant, but more importantly, how this dominance ultimately made computers and especially data processing such a potent force in so many facets of the world's endeavors. It will also help us understand why it became so important to State Farm Mutual.

IBM was officially named as the "International Business Machines" corporation in February 1924 when Thomas Watson, at that time the Chief Operating Officer of the Computing-Tabulating-Recording Corporation, recommended that the Board of Directors change the name, which they did. In December 1924, George W. Fairchild, Chief Executive Officer of CTR for many years and under whom Thomas Watson served his apprenticeship, died. Thomas Watson, Sr. now became Chief Executive as well as Chief Operating Officer and so IBM became his to mould and fit to his grand design. He immediately set out to do this with great success. From 1924 until the advent of the MARK I in the 1940's, Watson made three decisive moves:

1. He established the trade magazine "Business Machine" directed primarily for external readers and then added in the 1930's the magazine "THINK" primarily for IBM internal readers and for business customers, who might be interested. It had a circulation of 70,000 businesses and individuals. This became a great advertising tool!

2. He adopted a strategy of concentrating on large businesses that had a need for gathering and processing large amounts of data thereby ignoring small businesses such as lawyers, accountants etc. This strategy enabled him to pursue his 3rd decisive move.

3. He expanded his research and development of electrical accounting machines which enabled his salesmen to present continually to their clients upgrades and new versions of equipment already in

their shop. This helped his company, IBM, to expand with the expansion of his large client corporations and provide him with a built-in device for the conservation of on-going customers and thereby fend off would-be competitors. His principal competitors of the 1920's were the Burroughs Corporation and the National Cash Register company.[50] Remington Rand entered the competition somewhat later.

As a result of these decisive moves plus training a sales staff second to none, IBM, shortly before the beginning of World War II, became the pre-eminent producer of Electric Accounting Machines. It was, therefore, in position to take advantage of the great impetus of the needs of World War II, which indeed did enhance IBM's position dramatically.

At the end of World War II, IBM came out of the war about four times larger in manufacturing capacity and sales volume than it was at the beginning of the conflict. IBM and two of its closest competitors in the business machines arena took different but strange directions to adjust to the peacetime economy.[50] NCR and Burroughs were more concerned about conversion to the peacetime economy and therefore took a rather "soft" approach. IBM was not as interested in jumping headlong into the computer pioneering arena as was Remington Rand. As a result, IBM concentrated on moving gradually from the EAM market to the large computer, UNIVAC-type, market. That tactic characterized IBM's approach mainly during the period from 1946 to the early 1950's because of several important events which helped to shape IBM's direction:

1. In 1946, IBM introduced its 600 Series of electronic mid-size calculators—note calculators, not computers. These included first, the 601, followed by the 602, 602A, 603, and 604, which figured prominently in State Farm's early research of electronic calculators. (This will be discussed in depth in Chapter II). These were followed by the highly successful 650 System, which was really a hybrid electronic calculator-computer, and also extremely important in the inauguration of data processing at State Farm.

2. IBM reduced its funding for the successors of the MARK I, which were the MARK II, III, and IV. These were funded by the U. S. Army. Hence, IBM received little benefit from this line of activity. (It is my belief that this occurred because Thomas Watson, Sr. felt humiliated and ignored at the dedication of MARK I,[2] at the Harvard University ceremonies. Remember, IBM built MARK I for Harvard and then it was transported to Harvard for dedication. He left the dedication quite angry, vowing to build his own line of computers. A promise he kept with a vengeance!)

3. In 1949, IBM funded the design of the IBM 701 computer, which was designed for scientific purposes and, at that, was not as

powerful as the UNIVAC I, which was designed for commercial purposes.

4. IBM entered a transitional period in 1950 which affected its organization, products, leadership and scope of operations. This was caused by these events:
   a. Thomas Watson, Sr. was never convinced of the future of computers as were Eckert-Mauchly until the Census Bureau contracted for the UNIVAC I in 1950. This energized Watson to fund and push the IBM Series 700 scientific computer feverishly.
   b. Thomas Watson, Jr. was named president of IBM in 1952. Being younger and much more convinced of the importance of computers in IBM's future, he gave greater emphasis to this end of the business.

With these changes and events behind them, IBM then began to move into the commercial market with alacrity.

First of all, Thomas Watson, Sr., not entirely happy with the turn of events, nevertheless, supported his son but remained basically in the back ground until his death on June 19, 1956.

Secondly, Thomas Watson, Jr. pressed for the urgent design and building of the System 702, which was the commercial successor to the 701 and the first major commercial electronic computer built by IBM.

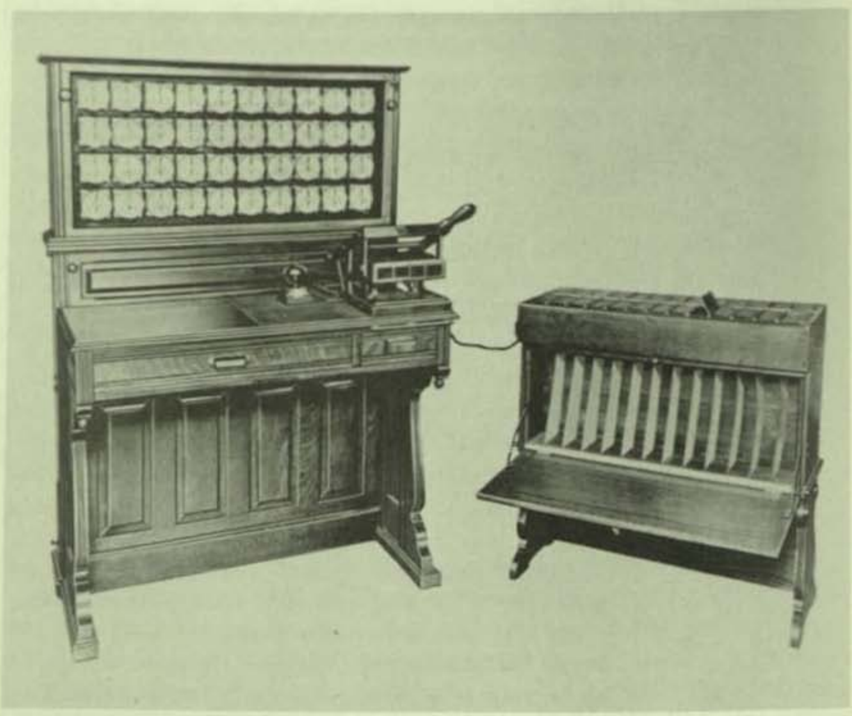
Thirdly, IBM settled a complicated court challenge by Remington Rand by signing a consent decree in which IBM agreed to pay Remington Rand $10 Million over 8 years. The settlement was much more complicated but that was the essential outcome which benefitted IBM more than Remington Rand. The case revolved around patent infringements.

Fourthly, IBM then moved aggressively into the market with its System 705, while maintaining its huge market base with it highly successful 650 Systems.[2] During the single year 1956, of all the computers sold or leased, IBM had more than 85% of the retail value, with UNIVAC having less than 10% and all others the remainder. This reversal happened in a matter of three years after UNIVAC had virtually the total market of commercial computers locked up as late as 1953.[2] Within another year and a half, IBM had 65.3% of the total market share.

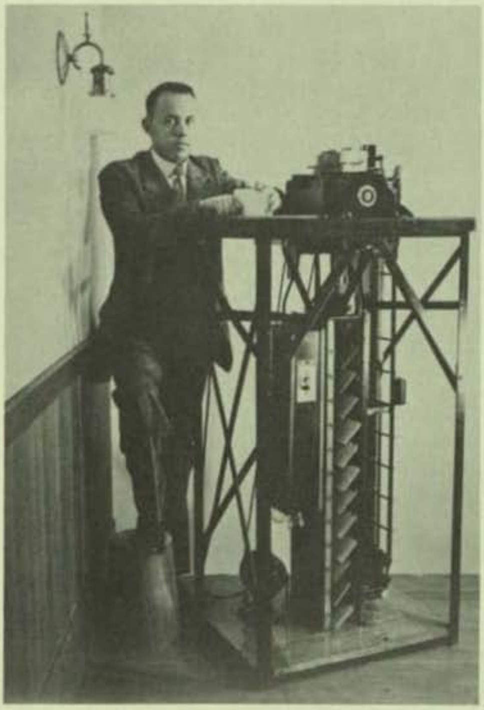
Enter Computers at State Farm

This brings us to the years 1954-1955 when State Farm made a decision to enter the computer market and establish the data processing function within State Farm Mutual. This ties in perfectly with the emergence of computers described above. All subsequent changes in the advancements of computers as used by State Farm Mutual will be described in subsequent chapters as the story of data processing at State Farm unfolds.

My purpose has been merely to present an historical trail of early computers which ultimately led to those computers which State Farm used in its initial data processing operations. Obviously, this is only a brief history of that trail involving a subject so enormous that many comprehensive books have been written, from many different viewpoints, about the history of computers.

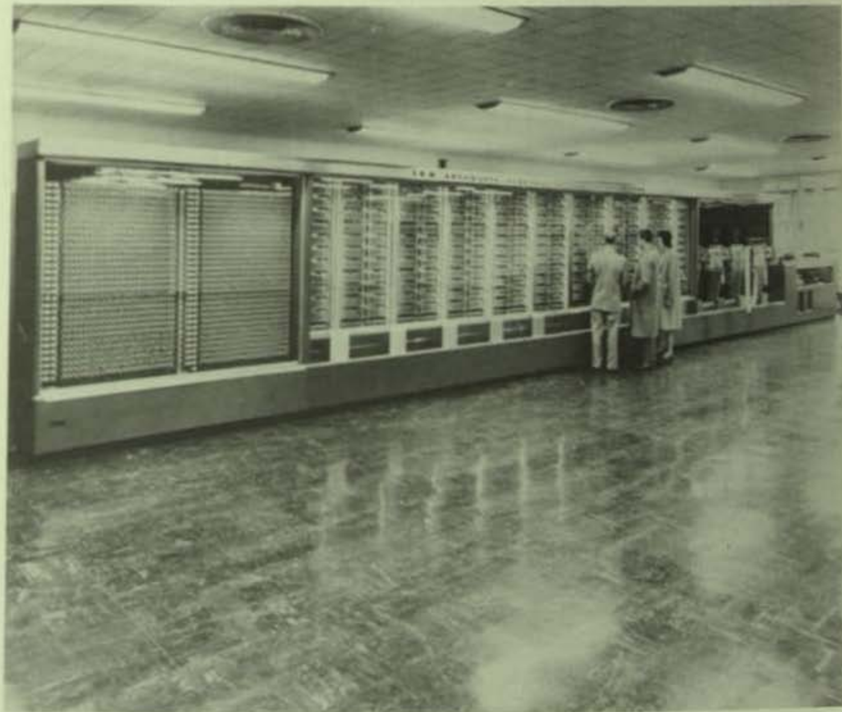


Hollerith Tabulating & Sorting machines used in 1890 Census.



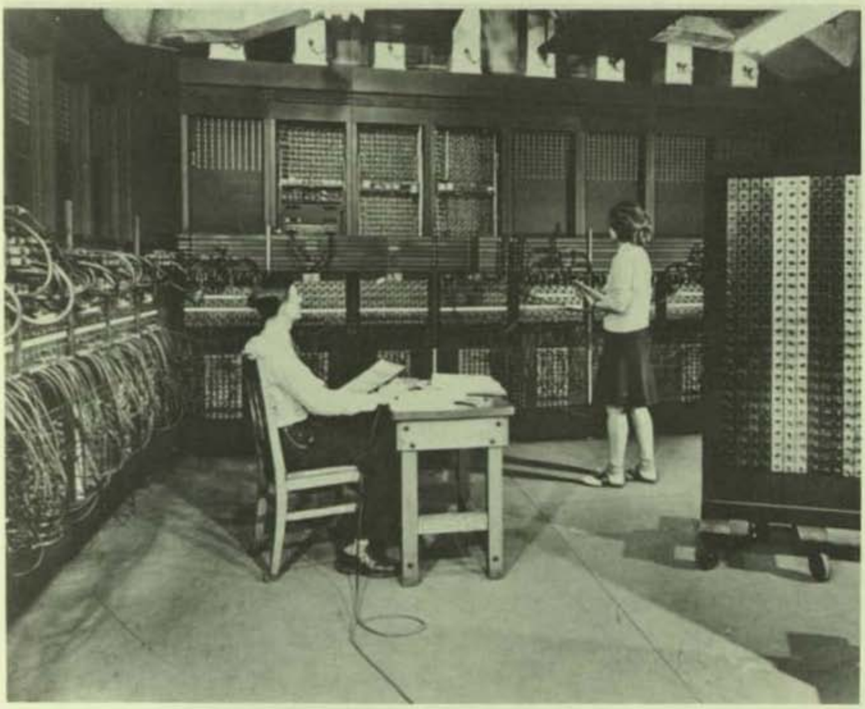
(Above) IBM Type 285 Tabulator — 1933.

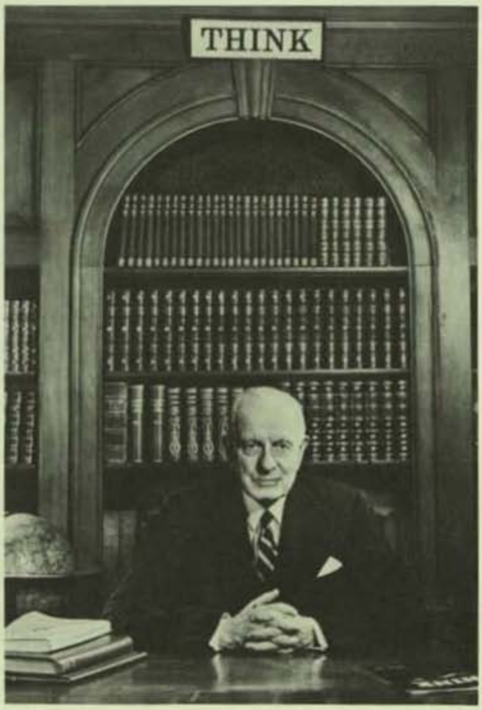
(Right) Vertical Hollerith Card Sorter — About 1914.



(Above) ASCC Computer — Built by IBM for Harvard as the Mark I in 1943.

(Left) SSEC-IBM Selective Sequence Electronic Calculator — 1948.





(Above) ENIAC — First Operational Electronic Computer — Built by Drs. Eckert & Mauchly.

(Right) Thomas Watson, Sr. — Founder of IBM Corporation.

Drs. Eckert & Mauchley — Builders of Eniac and Univac I.

Univac I — First Electronic Commercial Computer — 1951.

Dr. Eckert & Walter Cronkite with Univac I — 1952.

CHAPTER II

Record Keeping Before Computers

Data Processing, as a title for describing the process of record keeping and clerical work processing, existed before the advent of computers; however, its connotation has changed dramatically with the advent of the modern computer. The term "Data Processing" today is quite synonymous with the processing of work through a computer. Prior to the introduction of the computer, the same type of work processed today by a computer was then known variously as record keeping, work processing, and/or bookkeeping. Although all of those titles are still used today, they certainly acquired a different meaning and implied responsibility as we passed from the non-computer era to the current age of computers and data processing—a transition which is one of the essential purposes for writing this book.

In order to understand this transition fully as it applied to State Farm Mutual, it is important and necessary to explain briefly, the stages of work processing and record keeping that have occurred in our company since its licensing in 1922 until 1955 when electronic computers were formally introduced into the company. In order that we might get a proper "handle" on these various stages, I have chosen to divide that period into four basic eras:

1. The Manual Processing Era-1922 to 1928
2. The IBM Punch Card Era-1929 to 1945
3. The Premium Department Plan Era-1946
4. The Plan II Era-1947 to 1954

I realize others might have named these eras differently but I chose these titles because all processing before 1928 was performed entirely by typewriter and hand posting to journals and ledgers. In 1928 IBM machines were introduced into the company which caused most work processing to be designed around the use of these machines in the Accounting Department. By 1946, sheer volume created new problems which caused the Premium Department concept to be introduced. That did not work either, with the result that Plan II was developed and introduced in 1947 which worked very well, with only minor changes required to accommodate the introduction of electronic computers in 1955.

The Manual Processing Era

As we learned in the previous chapter, by 1922 the government and many other companies were already heavily involved with the early versions of mechanized record keeping and accounting, particularly those using Hollerith Tabulating Machines and punch cards, later to become IBM Tabulating Machines and cards.

During those early years of State Farm's existence, it is well known that although it grew relatively rapidly, both in the growth of its policies in force, and the relative percentage of the total market, the actual numbers in today's environment were indeed quite small. For example, at the end of the first year, 1922, there were 1339 policies in force and it required only one person initially to handle the record keeping for these policies.[5] Besides Mr. George J. Mecherle, State Farm's founder, this one employee was Miss Minnie Jones, secretary and treasurer, and described by "The Farmer From Merna" as the first home office "staff", to be joined later by Verna Crusius. Mr. Mecherle was Mr. Everything Else: agent, underwriter, claim adjuster, etc. during those critical early days. The "staff" did all of the record keeping as a stenographer, bookkeeper, claims clerk, billing clerk, policy typist, etc. There were no calculators, computers, or even an adding machine-hence overhead was low.

This "staff" was located on the second floor of the Durley Building from June 1922 until October 1922,[5] a short period of four months, when it moved to the Arnold Building, also known as the McLean County Farm Bureau Building. The Durley Building was located on East Jefferson Street and the Arnold Building still stands on the northeast corner of Center Street and West Monroe. State Farm Mutual had already out grown the space in its first "Home Office".

By the end of 1923, five persons were required for keeping records of the several thousand policies in force. It certainly is understandable why with even this great growth in terms of percentages, the need for the contemporary mechanized equipment simply was not necessary.

The company during its first year needed primarily one typewriter, two cardboard files and a phone and only a few extra typewriters and files for the immediately following years. No doubt an adding machine or more were added in the next few years although I have not been able to corroborate this. It is quite possible that the adding machines were hand operated, followed in a few years with power driven machines. By the end of 1925, a mere three years, partially as a result of State Farm's expansion of its agency force to Indiana,[7] the total policies had grown to 16,443 requiring only 15 employees to handle all operational functions including record keeping.[6] Even with such phenomenal growth, percentage-wise, during those early years of its existence, the company had no need for the "high speed" tabulating machines and punch cards marketed by IBM at the time.

During 1924, the company was growing so fast that it again rented space in the Durley Building for approximately one year when, in 1925, it moved to the second floor of the Odd Fellows Building, also known as the Odd Fellows Hall, where it remained until August 1929.

In 1928, record keeping changed dramatically and it was a very significant year for State Farm Mutual for many reasons. In 1927, it had surpassed an annual income of one million dollars. During 1928, policies in force grew so phenomenally that the number of employees required increased from 69 on January 1 to 183 by year's end. Such growth, happily, required the company to examine its future space needs which resulted in the purchase of 7950 square feet of land upon which was built the first Home Office Building, now known as the Fire Building,[5] and the opening of the first branch office in Berkeley, California in September of that year. It also required careful examination of its record keeping and work processing needs and capacity.

The IBM Punch Card Era

In September, 1928, State Farm entered into its first of many contracts with the International Business Machines Corporation for the "rental" of IBM Electric Accounting Machines, hereafter referred to as EAM equipment. This document if not the most important, certainly one of the most important, ever entered into by State Farm with the IBM Corporation. It is significant because it was the first use of power driven IBM equipment which accrued to the benefit of both companies. It was the beginning of a relationship which over the years, in no small way, gave a significant boost to the superior position both companies were to achieve in their respective fields of endeavor.

The initial IBM contract with State Farm was for "Tabulating Machine Service" and was dated September 20, 1928.[11] (An interesting footnote to the signing of this contract is that George E. Beedle, Secretary, signator for State Farm, was the same individual, along with Edna Bartholomew, nee Crusius, sister of Verna Crusius, who were the only two sent to Berkeley, California that same year to open the Western Branch Office.) This contract "offers to furnish its Tabulating Machine Service, comprising the use of its machines as specified below; and Tabulating Cards for use in connection therewith and also the advice and counsel of its staff in applying the tabulating system to your work of general accounting at Bloomington, Ill. . ." This contract involved the use of the following machines on monthly rental: (The heading "Speed-CPM" refers to cards per minute.)

Number	Name of Machine	Speed-CPM	Rental-Each
1	Type 3B Tabulating Machine	75	$225.00
1	Type 080 Horizontal Sorter	400	40.00

Number	Name of Machine	Speed-CPM	Rental-Each
3	Type 012 Duplicating Key Punch	(*)	12.00
2	Type 051 Verifying Key Punch	(*)	6.50

(*) These two machines were without electric motors, hence the punch cards were fed into them by hand one at a time.

Obviously, these machines were quite historic since they were the very first ever used in State Farm Mutual. This was the beginning of the rather important era of mechanical record keeping which served as the precursor of Electronic Computers which were introduced into the Auto Company in 1955.

While 1928 was a an important year in many ways, the year 1929 was a paradox—a great and memorable year for State Farm but a pivotal year for the world economy and the record keeping industry because of the Great Depression which began in October with the stock market crash, which I remember vividly.

Apparently, the Great Depression did not significantly affect State Farm's phenomenal growth because, not only did it move into the new Home Office and organize the State Farm Life Company in 1929, by 1934 it added five more stories with the 13th floor as an auditorium. (Remember, the building was now only the south half of the current Fire Building.) Although the Depression had a devastating effect on many industries and agriculture for the United States' and world economies, State Farm continued to prosper as evidenced by the 795 employees, 383,152 auto policies in force, and over $30 million of Life Insurance by the end of 1935 plus $4971 of Direct Premiums written for the Fire & Casualty Company which was established that year.

For many industries worldwide, the Depression lasted until it was "conquered" by World War II. Not for State Farm. It continued to grow and by 1940 had 1251 employees,[6] 648,690 auto policies in force, about $66 million of Life Insurance in force, and over $728,000 of Fire Direct Premium. World War II had started in 1939 and was to become a truly worldwide conflagration when America entered as a result of Pearl Harbor. Strangely, the war would affect both State Farm and the record keeping business manufacturers in different ways. From 1940 to 1945, State Farm virtually doubled in size with 1,219,142 policies in force, 7573 agents, and 2084 employees while the Life and Fire Companies grew even faster,percentage-wise.[6]

This extraordinary growth over the decade of 1935 to 1945 required the purchase in 1937 of the Odd Fellows Building, located just north of the then Home Office Building on the northeast corner of the same lot at Jefferson and East streets. This building included the Odd Fellows Hall on the second floor, the one-time Home Office, and Milbers Cafe just below. This provided the space for the building of an 8 story "new" building immediately north of the existing Home Office. The alley way between those buildings was closed so the "new" building could be attached. This addition was ready for occupancy in 1939 which again proved inadequate when the last 5 stories of the north half of the "new" building were virtually finished in 1946. I personally started with the company on January 6, 1947 when the last moves of employees into those upper 5 floors were in their final stages.

World War II Enables EAM Companies to Prosper

Meanwhile, IBM, to a lesser degree than its chief competitors, Remington Rand, National Cash Register, and Burroughs, had been adversely affected by the Depression but emerged from World War II in 1945 in a very strong position. Let us return, therefore, to 1929 and review how both the Depression and the War affected that industry and thereby indirectly, record keeping and work processing for State Farm for the next one and one half decades.

Over this time period, after signing the initial IBM contract, State Farm used IBM Electric Accounting Machines exclusively except for a small contract with the National Cash Register Co. For purposes of this book, we will deal only with the IBM-State Farm relationship during those years.

Thomas Watson, founder of IBM, wisely decided early in the 1920's that the prudent approach in marketing IBM products was to lease his machines but sell the cards used by those machines. This turned out to be a brilliant move as the depth of the Depression became apparent. Most of his primary competitors sold their equipment exclusively. This had a double-edged benefit for IBM:

1. Along with his decision to provide training for his customers, as included in State Farm's contract, by leasing he kept his foot in the door of his clients.[2]
2. By reducing the costs via leasing, his customers were much more inclined to upgrade their equipment as well as add new equipment as innovations were announced by IBM. This in turn created a greater market for his punch cards at a time when cash flow was severely deflated.

Watson, also quite differently than the chief executive officers of his primary competition, was a great admirer of the New Deal sponsored by President Franklin Roosevelt. This resulted in a close friendship which paid off handsomely prior to the war in terms of Social Security and other governmental agency contracts, and during the war when much of the record keeping equipment was needed by the War Department and the Armed Forces.

Despite this boost, during the first six years of the Depression, annual revenues from rentals and sales undulated with rentals increasing from

$8.7 million to $16.9 million while sales dropped from $10.7 million to $5 million by 1935. This represented an increase in revenues of $2.5 million after a couple years of actual decreases in 1932 and 1933. Inasmuch as this represented a rather meager annual increase over that period, by contrast, from 1936 to 1940, the annual revenues rose above $40 million or by approximately 83% by the end of those 5 years. This growth propelled IBM for the first time into the pre-eminent position in the industry as the top business machine company in the USA.[2] (A position it was never to relinquish.) The wartime requirements of the federal government enhanced IBM's revenues so greatly that by 1945 they reached $147 million, more than trebling the 1940 totals.

But how did all of this growth amidst the turmoil of the Great Depression and World War affect IBM in terms of Research & Development of new equipment and the production of this equipment for the benefit of its customers, including State Farm, during this turbulent 16 year period? From my personal research on this subject, I have found that most publications at least imply that IBM increased its research and development during the Depression commensurate to its growth in revenues. However, it is my impression that the improvements in its accounting machines and punch card equipment during the early stages of the Depression were rather modest. It appears to me that the more important improvements in EAM equipment were introduced after 1935, with heavy emphasis on electronic calculators and computers after 1940.

During the war years, because of the great demand for Electric Accounting Machines by the government and the ensuing need for more capital to produce those machines, together with the parallel needs of funds to build the Mark I Electronic Calculator (see Chapter I), Watson began to channel the bulk of his research dollars towards the promise of Electronic Computers which signaled the end of research dollars for the old EAM equipment.

Because of the Depression and World War II, the net effect was that overall the great impetus for improving record keeping mechanical and electronic capabilities appeared after the war with only modest improvements before the war. We will see this reflected in the types of equipment available and leased by State Farm during this period.

The basic equipment marketed by IBM in 1931 was still the same type as was leased by State Farm in 1928—key punches (hand fed), vertical sorters, and numerical (only) tabulators without summary punching. (For those of you not familiar with summary punching, it simply means that when introduced later, as totals were printed by the tabulator, it would also punch those same totals or even additional totals into punch cards which then could be used later for additional summarization and/or printing.) In 1932, IBM began to lease the Type 405 alphabetic tabulating machines,[2] which became the most important EAM equipment in IBM's product line and the standard by which competitors would measure their products for the greater part of the decade of the 1930's. Throughout this period and into the 1940's, IBM's product line remained punch card oriented, with the basic products continuing to be key punches, verifiers, sorters and accounting machines. The verifiers were used to verify the accuracy of the punched IBM cards. The verified cards were then fed into sorters to be sorted into pre-determined groups, and then printed by the electric accounting machines for record keeping.

Large companies, such as State Farm, would require additional machines such as gang punches, which could punch the same basic punches into literally thousands of additional cards as needed; and collators, also introduced during the 1930's, which could collate or interleave cards with different information into a single group as pre-determined by wiring a control board.

Over this period of time, State Farm increased its inventory of leased IBM machines substantially, having requirements for most of the different types of card handling equipment IBM marketed at the time. By 1945, State Farm was leasing most of the latest versions of IBM's EAM equipment such as Type 015 and 016 key punches, 052 verifiers, 080 sorters, Type 297 and 416 tabulators, and 077 collators.[8] My purpose is not to name all the EAM equipment State Farm used at that time but to give you a flavor of the record keeping environment as it pertained to the State Farm-IBM relationship at the time.

As stated earlier, equipment improvements were modest. The changes did not include significant increases in card handling speeds or dramatic other innovations, although there were some. The principal change that may be considered as somewhat dramatic was the introduction of the IBM 601 calculator in 1937 which State Farm added to its leased IBM equipment that year.[9] The IBM 601 was not a true calculator but merely a high speed multiplier which had the capability to punch the result into IBM cards. In the 1940's, it was replaced with the Type 602, a true calculator, only to be superseded by the 602A which introduced "wired programming". (It was the 602A in the early 1950's on which I personally learned how to "program" a punch card calculator for the first time.)

Let us now turn to the more important "human" aspects of those early years of record keeping in terms of some of the key IBM management, and sales personnel who so capably assisted our employees from 1929 to 1945; and, the State Farm personnel who managed and operated the IBM card machines during this period.

Apparently IBM did not keep permanent records as to the personnel assigned to State Farm during those early years but through the assistance of retired IBM personal acquaintances including Arnold Nygaard, Guy McMillan, and others, these were the key IBM managers and sales managers or representatives during this period:

Name	Function	Year(s)
Mr. Nagel	Sales	1928-Early 1930's
Charles Hemphill	Sales	Early 1930's
Charles O'Malley	Sales	Late 1930's-1940's
Claude Mahan	Spec. Sales Rep.	Late 1930's-1950
David Harsh	Sales	1945-1950
Jack Clatfelter	Sales	1950-1955
Wendell Clithero	Branch Manager	Late 1940's-1956

It should be remembered that during these early years State Farm used IBM equipment almost exclusively and therefore these men often acted as trainers and technicians, assisting State Farm employees far beyond their principal duties.

Moving IBM Equipment to New Home Office

As the company moved from the second floor of the Odd Fellows Building to the new Home Office Building in 1929, one of the interesting tasks was the transfer of the heavy IBM machines between the two buildings when there was an alley between them. Although not as large or heavy as computers were to become by the 1950's, it was indeed a difficult task. According to Freda Adams, nee Pomrenke, one of the company's original key punchers, this task was accomplished by placing heavy planks from building to building over the alley way which separated the two buildings. The IBM machines and other equipment were then moved from window to window over these planks!

Freda, who began her career in the Odd Fellows Building, also informed me that the key punches and the other IBM equipment were located in one room, in the northeast corner of the second floor, of the Odd Fellows Building before the move and again were in the northeast corner of the second floor of the new Home Office Building after the move.

In 1930, the Accounting Department occupied the entire second floor of the new Home Office. According to a floor layout as published in the souvenir booklet titled "Sixth Annual Agents Convention and Home Office Building Dedication", prepared for the three day dedication ceremony, February 17-19, 1930, Mr. George E. Beedle, Secretary, was the executive in charge of the entire Accounting Department and occupied an office in the southeast corner of the second floor.

George Beedle had played an important role in the company's earlier history including the opening of the Western Office in Berkeley, California, the signator of the first IBM contract, and then head of the Accounting Department. Reporting to him was A. L. Baumann, Auditor, who had joined the company in 1929 and occupied the southwest office on that floor. With the exception of four employees occupying smaller offices along the south wall,[2] the remaining 46 employees of the department were provided desks in the "open seating" area of the floor. Included was the Accounting Machines Division.

Harold Mecherle,[13] who was the first employee to work directly with the new IBM machines when they were initially delivered in 1928, by 1930 was the first Division Head of the Accounting Machines Division within the Accounting Department. In addition to Mecherle, the other members of division consisted of Dan Carmody, Herman Salch, and Carl Wettersten. Beyond these four "pioneers", the Accounting Department was made up of 12 key punchers, 34 other employees doing a number of tasks such as bookkeeping, premium calls, time checks, cashiers, correspondence,[12] and A. L. Baumann, Auditor, who supervised the area and reported to Mr. Beedle. Baumann was later named General Auditor and in 1948 was appointed Assistant Comptroller, which position he held until his retirement in 1959.

Harold Mecherle, after a short period of time, moved from the Accounting Department into one of the Operating Divisions and ultimately into the Agency Department, from which he retired and moved to Venice, Florida where he currently resides. Dan Carmody, also after a short period of time, resigned from State Farm and became a partner in the Carmody-Murray Funeral Home.

Herman Salch became supervisor of the Accounting Machines Division after the departure of Harold Mecherle.[13] Salch moved to Berkeley, California in April 1933 to assist the Western Office in the change from manual to IBM machine record keeping, and returned from California in 1937 when he assumed the role of machine supervisor in the Statistical Department. In 1953 he became chief accountant and IBM consultant.[15] He remained in the Accounting Department on the second floor of the original Home Office until his transfer to the second floor of the Illinois Office Data Processing Annex during the late 1960's until his retirement in 1972.

Carl Wettersten, originally was the IBM Customer Engineer, originally known as an IBM repairman for State Farm working out of the Peoria IBM Office. Wettersten spent so much of his time in Bloomington that State Farm eventually gave him a desk and work space on the second floor. Ultimately, he became a State Farm employee in the Accounting Department and ended his career in the North Central Branch Office in the 1950's.

Others who had significant record keeping responsibilities and managerial roles in the IBM Punch Card Era besides those mentioned above, were A. Edward Kitz, Arthur Eiff, Arthur Dierkes, Lewis Cox, Frank Mittelbusher, and G. B. Brown.

A. Edward Kitz, began his career with State Farm in 1928 after a previous stint as an accountant with another firm. The first assignment given Kitz upon his arrival was to convert the accounting procedures from the manual processes to IBM machine accounting procedures. By 1930, he was Chief Accountant and supervisor of the Bookkeeping Unit over some 10 employees,[13] who were handling the bulk of the bookkeeping chores for the young company.

Arthur V. Eiff began his career in 1928 as a mail boy. One of his duties was to deliver mail to a young lawyer, Mr. Adlai Rust, a legal counsel in the Unity Building, who was destined later to become president of the State Farm Companies. The year 1930 found Eiff in the Accounting Department learning accounting procedures as well as training on IBM machines. He assumed important supervisory roles in Accounting during the 1930's and 1940's including supervision of the "Punch Card

Division" and was appointed Assistant Auditor in 1946. The year 1948 marked an important milestone in Eiff's career when he moved out of the Accounting Department and into the Operating Divisions with a series of successive promotions as Manager in the Eastern, Alabama-Tennessee, and Missouri Divisions.[14] When the Midwest Office (Illinois Office) opened in 1957, Eiff was selected as Resident Manager, serving in that capacity until 1962 when he became its Deputy Regional Vice President of Operations, a post he held until retirement.

Arthur H. Dierkes started his career in State Farm in 1934. Inasmuch as Dierkes had a very significant impact on the computer eras after 1955, I will deal here only with his career progress while in the Accounting Department during the IBM Punch Card Era, much of it under the supervision of Lewis "Lew" Cox. During those years he worked with IBM machines, later supervised the Billing Department, and prior to joining the Planning & Research Department, was in charge of auditing the Branch Office Accounting Departments, which included only the Western Office at Berkeley, and the Canadian Office in Toronto, Canada. North Central, the next branch office, was not opened until February, 1947.

Lewis L. Cox, Auditor, who began his State Farm career in 1932, was placed in charge of many of the Accounting Department functions except for the Statistical Department functions which were at that time under A. Edward Kitz. Cox reported to Mr. Baumann for most of his career and was promoted to Chief Auditor. Later, when the Statistical Department was placed under the supervision of Frank Mittelbusher, Cox retained all other remaining accounting functions until his untimely death which occurred in November 1965, a few days before his scheduled retirement.

Frank Mittelbusher began his career in July 1933 under A. E. Kitz, only to resign in October that year to move to a small insurance company in Iowa. In March, 1936, Mittelbusher returned to State Farm to head the Statistical Department and in 1948 was named Chief Statistician. When the Statistical Department was established as a separate entity, it also became heavily involved with various IBM machines necessary for the compilation and printing of statistical reports for the various company executives. Mittelbusher was promoted to Vice President, Statistics in 1954, a position he held until his retirement in 1972. At that time, the work performed by the Statistical Department was merged into and became a responsibility of the General Accounting Department.

Gilbert B. Brown, known affectionately as "G. B.", joined State Farm Mutual in August, 1935 as a distinguished CPA from Chicago. Recognized before his arrival at State Farm as an expert in tax accounting with considerable experience in public accounting, initially was named an assistant to the president of State Farm Mutual. Brown was named the company's first Comptroller in 1937 and in that capacity was responsible for the accounting and statistical operations of the entire company. Mr. Brown was to have an important impact on the initiation of computers in State Farm; hence, more will be found about his influence on this subject later in this chapter.

Each of these men played an important and distinctive role in the record keeping process via the use of and the administration of work processed by IBM machines throughout this punch card era. It was my privilege to know and work with all of these men with the exception of Edward Kitz.

Record Keeping Procedures During Punch Card Era

In order to keep all of this in the proper perspective, let us examine the record keeping procedures that existed during this era that distinguished it from the eras that were to follow. Basically, the work processing organization during these early years grew from a single room in 1922 with a few clerks, to a number of "Operating" departments such as the "Minnesota Department" in 1930, each of which by then included a series of small units such as Claims, Valuation, Policies & X-cards, Premium Calls, Time Checks, "Cancellation, Reinstatement, and Suspension" and Filing. The operating departments were all supported by the Accounting Department which was responsible for all IBM machine processing during those early years.

Before the end of the decade, the company had grown so rapidly that the work processing was done primarily in three large departments, namely, the Underwriting Department, the Claims Department, and the Accounting Department. The Underwriting Department examined the application as the risk approval authority. The Claims Department handled the requests for payment or rejection of such claims against the policy as originally approved by the Underwriting Department. The Accounting Department at this time had a much greater role in the key punch record keeping functions than it would have in later eras when entirely new work processing plans were introduced.

Record keeping procedures were somewhat involved during this era in which the Accounting Department had the primary responsibility for the machine processes, which served the company well during those early years. Those procedures had many facets but we will discuss in detail primarily those pertaining to the processing of the new business and transfer applications, and the renewal of existing business, commonly known as "renewals", via the "x-card". The x-card was a 4x6 card containing the vital information about the insured as to name, address, coverages, premium payments, renewal information, and limited miscellaneous information. The term "x-card" was shorthand for "expiration date card".

A very brief description of these procedures may assist you in understanding this era with more clarity. New business applications or transfers to a different vehicle were received and underwritten in the Underwriting Department before being sent to the Accounting Department. Upon receipt of the application and remittance, the Accounting Department would code the accompanying work sheet with codes that could be used by the IBM machines. The "file" then was sent to the Key Punchers and Verifiers, which at this time were in Accounting, for preparation of the punch cards which were to be fed into the IBM machines. After the verification of the IBM cards, the "batches" of key punched cards were balanced with the payment totals and sent to the "machine room" for the punching of "summary cards" and printing on IBM Accounting Machines of the accounting posting summaries and statistical reports. The applications were returned to the Underwriting Department for filing.

This is an extremely abbreviated description of this process but enough to allow us to understand the changes that were required in later years to streamline this process as designed under the Premium Department Plan and Plan II, described later in this chapter. Renewal Billing followed somewhat the same procedure except the x-cards were sent to the Billing Section of the Accounting Department. Claims processing followed a somewhat similar pattern except pertinent information was punched into claims punch cards for processing on IBM machines.

During this period from 1930 through the World War II years ending in 1945, the company survived a great depression and the loss of many of its experienced employees to the war. The result, especially during the war, was a concentrated effort to just "survive" the war and be able to handle its business without being overwhelmed. Survive it did, but it had no resources for research into major changes in procedures until after the war. Those ongoing procedures, which had served the company well, would no longer handle the onslaught of new business after the war's end.

The combination of the great increase in business as the troops came home together with the length of time required for the transmission of the applications and x-cards between the various departments, the considerable processing of the work while in those departments, and the transmission of the files back again resulted in such a backlog of business that the unavailability of applications and x-cards for claims handling and the routine handling of correspondence became intolerable. "Hunt Lists" were printed of unavailable applications and stacks of applications could be found in window sills, on the floors, and on top of file cabinets.[10] In a few extreme cases, renewal remittances for the previous six-months' policy term were found attached to files ready for the subsequent billing.

The company began to feel some of this emerging pressure for faster file movement between desks and floors of the Home Office building as early as 1940. It instituted a very unique method for moving mail and assisting in the task of hunting and retrieving files, fully aware it would only be a "stop gap" measure. Girls were hired as "skaters" for the precise purpose of moving mail between desks and the "dumb waiter" for other floors. Other skaters were hired as "hunters" assigned to hunt and retrieve applications on skates for underwriters, and clerks. They used roller skates equipped with rubber tired wheels which would provide noise control and would not slip on the hard-tile floors of the Home Office Building.

Theo McElvaney, nee Dugger, one of the skaters during this period remembers that each floor had two or more skaters performing those tasks. Unfortunately, a complete list of the names of those skaters is not available; but, it is known that besides McElvaney, one of the first skaters was Fayne Hoobler and one of the last was Betty Madden during 1945. This was one of the innovative concepts State Farm installed to alleviate some of the labor shortages encountered at that time. In 1945, when the problems became substantially more severe, this concept was terminated.

The file handling and record keeping problems came to a climax in 1946, which prompted corporate management to establish several top level committees for the purpose of alleviating those bottlenecks. Out of this turmoil several significant plans and programs were devised over the next few years which were designed to correct those problems.

Policy Writing Offices Established

In May, 1946 State Farm introduced a new concept which was known as the Policy Writing Offices.[19] This was the forerunner for the formulation of a much more comprehensive work processing and record keeping plan, the Premium Department Plan, introduced in November, 1946.[17]

Policy Writing Offices were designed to reduce the work load of the Home Office Underwriting Departments and merely assumed some of the "New Business" policy writing chores. Those offices were located near State Agency Offices from which new applications were to be received. Those offices were designed to issue the policies for new business applications only. Transfer applications continued to be processed exclusively in the Home Office.

Each Policy Writing Office had a staff of one or two underwriters, two or more policy typists and policy checkers, and other underwriting clerks as deemed necessary for the handling and mailing of the applications and policies. The applications were mailed to the Home Office and the policies were mailed directly to the agent for delivery to the policyholder.

The office manager and underwriters were generally individuals trained in the Home Office whereas the remaining positions were filled by employees hired from the inhabitants living near those offices.

Initially four Policy Writing Offices were established in May 1946.[20] By year-end 1946, 12 additional offices were opened making a total of 16 Policy Writing Offices which were located across the United States. The Illinois office was established on October 13, 1947 and apparently was the last Policy Writing Office created. I was privileged to be named the first manager of that office, located in the Bloomington Hotel on Center street. The number of employees in that office varied between twelve and fifteen, being a little larger than most offices because of the size of the Illinois Division. Larry Theis replaced me as manager on March 29, 1948 when I joined the newly formed Planning & Research Department.

The names of the known Policy Writing Offices,[20] their location, and the first, and most often, only manager in the order of the office establishment were:

OFFICE	LOCATION	MANAGER
Michigan	Lansing	Ike Gage
Virginia	Richmond	Francis Michaels
Minnesota	St. Paul	Charles Foreman
Nebraska	Lincoln	Glenn Henderson
Iowa	Des Moines	Clayton Sturgeon
Alabama	Birmingham	Pat Eicher
Kansas	Topeka	Bill Kelly
Missouri	Jefferson City	Harold Miller
Wisconsin	Madison	Willard Bunn
Indiana	Indianapolis	Warren Gemberling
Pennsylvania	Harrisburg	Gordon Edwards
Texas	Dallas	Unknown
Colorado	Denver	Nelle Taylor*
South Carolina	Greenwood	Del Erickson
Georgia	Atlanta	Fred Whitehead
Kentucky	Louisville	Robert Downs
Illinois	Bloomington	Myron Willke

* Nelle Taylor was the first and possibly the only woman to manage a Policy Writing Office.

The Illinois Policy Writing Office was an aberration in that it was opened when Plan II was established in Illinois whereas most of the other sixteen offices were closed when Plan II was established within their respective Home Office divisions or shortly thereafter.

The Premium Department Plan Era - 1946

At this time in 1946, according to a statistical report published in 1972, there were over 1,250,000 auto policies to be serviced by approximately 2200 employees countrywide. Not only was this number of employees inadequate, many were now returning from the war and others were restless, resulting in a high turnover rate—all of which placed a heavy burden on the training and retraining elements of an already over-loaded management staff.

Great credit must be given to State Farm's top management in 1946 for acting courageously and decisively in order to correct a problem that could have seriously hampered the company's growth and which could have challenged its recently acquired position as the world's largest automobile insurance company. To correct those work processing and record keeping problems, it established the new Premium Department. (The policy writing offices were not intended to correct but merely alleviate these problems until the new major plan(s) could correct them.)

Carl Marquardt, formerly an underwriting division manager of the Minnesota Division, who in future years was to have a significant role in the establishment of data processing at State Farm, was named the Premium Department Manager. Bess Dragoo was named as Marquardt's secretary.

Marquardt had moved through the ranks rapidly as evidenced by the ALFI article of November, 1946: "A real success story is that of Carl Marquardt who started in the app files 12 years ago and is now head of the new Premium Department." Possibly a better measure of the man was a motto placard displayed in his office which read: "If you are too busy to be courteous, you are too busy." Marquardt, who was to become my supervisor under various supervisory titles for more than twenty years, was a tough taskmaster but extremely fair. If he knew you were trying to do your "level best" at all times, he would support you and literally "fight" for you. But lo, if you were consistently "goofing off" or not really trying to do your very best! Ernest "Ernie" Hoffman, who incidentally was elected as an Assistant Vice President on the same day as I was, reminded me that Marquardt had a favorite saying in those meetings when there was much talk but little was being accomplished: "Let's have less 'hooey' and more 'dooey'". That was the Marquardt I knew and who in 1946 headed the new Premium Department.

Arthur Dierkes was named assistant to Marquardt and the department was under the general supervision of the Comptroller, G. B. Brown. According to Royal J. Bartrum, who was a member of committees that established the Premium Department Plan (and later Plan II), this Plan was the "brainchild" of G. B. Brown and Theodore "Ted" Campbell, Underwriting Vice President. The details necessary to make the plan function were devised by a subcommittee composed of E. B. Rust, Sr., chairman, Bartrum and Marquardt.[5]

As stated earlier, record keeping and work processing remained rather static after the introduction of IBM machines in 1928 until the introduction of the Premium Department from the specific viewpoint of work flow. In previous years, the Underwriting Department basically handled the acceptance, underwriting, and issuance of policies and their renewal while the Claims Department handled the processing of claims. The Accounting Department handled all key punching and the processing of the punch cards through the IBM accounting machines for the summarization and printing of financial records and management reports.

This new department was established to handle certain functions which previously were the responsibility of the underwriting divisions.[17] In order to carry out these tasks in coordination with the underwriting divisions from which those functions were extracted, the Premium Department was divided into divisions which matched those underwriting divisions it served.

The record keeping and work processing changes under the Premium Department Plan concept applied primarily to those previously handled by the underwriting and claims divisions with only minor changes for other departments. The principal changes under this concept were that the Premium Department was assigned the following responsibilities:[17]

1. The x-cards (expiration cards) were to be kept intact in a central location, the Premium Dept., so that they would be "readily" available for all departments that had use for the card. This was very important at that time because the x-card was a 4x6 card, filed in policy number order, and the primary source for coverage and renewal information of the auto policyholder.

2. All auto policyholders were to be billed for renewals, renewal payments to be collected, renewals to be recorded on the back of the x-cards, renewal remittances to be handled on a centralized basis "to provide accurate controls for prompt banking", and all payments were to be transmitted on a timely basis to the Accounting Department.

3. All correspondence, after the policy had been issued, and policyholder contact was assigned to the Premium Department except that which dealt directly with underwriting practices.

Those changes were intended to relieve the Underwriting and Accounting Departments of those clerical functions so that they could concentrate on their own specialized tasks.

The ALFI NEWS of November 1946 ascribes to this plan the following alleged advantages:

> "This concentration of work will also give the individual employee a chance to learn more about his work as well as providing better supervision.
>
> "Instead of trying to learn several kinds of work at once, employees can learn one job more thoroughly which gives everybody a chance to show what he really can do.
>
> "The same principle applies to all levels of supervision."

There is nothing wrong with these concepts as stated and are the basis for an "assembly line" type of processing. But when used in combination with some other more fundamental problems noted earlier, especially the tremendous increase of new applications, it was soon discovered that this concept just did not work.

The establishment of the first four Premium Divisions was announced in November, 1946. This new plan was initiated in Division 4 which included Minnesota, North Dakota, South Dakota, and Montana, located at the time in the Bunn Building which was near the railroad tracks on south Main Street. This new division was managed by Robert Armstrong, who later transferred to the St. Paul Branch Office, as it was known when it opened in 1947. Armstrong later became a Deputy Regional Vice President of the North Central Office and retired as Deputy Regional Vice President of the Southeastern Office in Jacksonville, Florida.

Three other Premium Department divisional managers had been named including Lewis Poston, manager of Division 1. This division was large enough to include only the state of Illinois. Poston later became the Service Superintendent of the Illinois Division under the Plan II concept and remained in that position until his untimely death in November 1973.

Division 2, located on the north end of the third floor of the original Home Office Building, included the states of Delaware, Maryland, Louisiana, North Carolina, South Carolina, Texas, Virginia, West Virginia, and the District of Columbia. Joe Kearney was named manager of this division. Kearney also became a Service Superintendent under the Plan II concept but a few years later became a State Farm agent in Arizona.

The fourth division established under the Premium Dept. concept, Division 5, was located on the sixth floor of the Home Office Building. It included the states of Colorado, Kansas, Wisconsin, Wyoming, and Michigan. Ivan Pierce was named manager of this division and ultimately became a Deputy Regional Vice President of the Northwest Office in Salem, Oregon from which he retired.

Only five additional Premium Divisions were established according to available records before the concept was abandoned, although more may have been established. These five were:

Div. No.	States in Division	Division Manager
3	Iowa & Nebraska	Wayne Bradley
8	Ala., Fla., Ga., Miss., Mo., & Tenn.	George Brand
9	Indiana	Robert Holland
10	Wisconsin	Robert Poorman
Unknown	Michigan	Herschel Holmes

You may have noted that a couple of states, i.e. Michigan and Wisconsin, were included in the four original Premium Divisions and then again as separate divisions. This simply reflects the tremendous growth after the war when within a few months additional divisions were carved out of the multiple-state divisions as they became unwieldy.

The Premium Department Plan had a minimal effect on the work flows of the Accounting Department. The principal Accounting Department management change stemmed from the transfer of Art Dierkes to the Premium Department as assistant to Marquardt. The IBM representative handling the State Farm account at that time was David Harsh, who worked under the supervision of Wendell Clithero, Branch Manager, located in Peoria, Illinois.

One other significant event occurred during this time period. The last 5 floors on the north end of the Home Office were completed ready for occupancy early in 1947. The Premium Department Plan Era, lasted about one year when Plan II was installed beginning in the Indiana Division in August 1947. (Much more will be written about Plan II later in this chapter.) Shortly after these Premium Divisions were implemented, it became readily clear to Marquardt and the division managers that this concept did not solve the problems it had been devised to solve. To illustrate how rapidly this decision was reached, I personally joined State Farm in the Illinois Underwriting Division on January 6, 1947 and within a few weeks I heard about those problems and that the Premium Department concept would be eventually abandoned. Unfortunately, instead of reducing the flow of work bottlenecks, it exacerbated them by the insertion of another department through which the applications and x-cards would need to flow.

The Plan II Era - 1947 to 1954

The Survey and Procedures Committee which was named by George Mecherle, Chairman of the Board, in 1946, to solve the problems identified earlier and which the Premium Department Plan did not solve, was given this charge which resulted in Plan II:

> "Its function will be to weigh carefully each and every practice and procedure employed in the processing of our business, determine the practicability of the present practice and whether it should be continued, abandoned or changed, and, if so, what changes should be made."

Although Plan II, as the name implies, was the second major overhaul of State Farm Mutual's record keeping and flow of work procedures since its founding in 1922, it was the first "drastic" change and fortunately with a very beneficial impact. Although not perfect, it eliminated most of the major work flow problems which it inherited. This change not only affected the work flow within the underwriting and claims divisions but significantly altered the flow to, through, and from the Accounting Department. (Available written records do not reveal what at that time was considered Plan I. Individuals involved with that era are divided in their opinions as to whether it was the Premium Department Plan or the plan to begin decentralizing into Branch Offices. Both concepts were conceived in 1946. It is my personal opinion that the Premium Department Plan was considered as Plan I.)

Besides the bottlenecks in the work flow, Plan II was designed to solve some, obviously not all, of the problems brought on by World War II including shortages of labor and equipment, loss of experienced management personnel, greater expectations of employees who did return from the war, less stability of the labor force and other similar problems. (One of my colleagues in 1947 had had 23 jobs before joining State Farm and shortly resigned for No. 24.) All of those problems which had begun to arise during the war simply reached a "crescendo" after the war and by 1947 required some effective remedies.

Other serious problems which Plan II could not even pretend to solve included the need for more space despite the 5 additional floors which had just been added to the north half of the Home Office Building. Space was rented in buildings "all over town" including the Consistory, the Bunn Building, the Bloomington Club and others.

Therefore, the major corporate committees which wrestled with the work processing problems in 1946 also dealt decisively with the space problems by devising a plan for a series of Branch Offices which included plans for the North Central Branch and West Central Branch Offices, which were established during 1947 in St. Paul, Minnesota and Lincoln, Nebraska, respectively. Cranford Ingham was named Manager of the "St. Paul Branch Office" and Wallace "Wally" Sherman was named Manager of the "Lincoln Branch Office".[21] These two offices were the first, after the very early Western and Canadian Offices, of a new series of Branch Offices which later were named "Regional Offices" and which as of this writing number 29 offices countrywide already in existence or planned. (The initial plan was for one Branch Office for every 100,000 policies in force. With the exceptional growth that State Farm was to experience over the years, that limit was soon abandoned.)

As if the flow of work, people, and space problems were not enough, the claim frequency and cost of claims (claim severity) rose at such an accelerated pace that in selected states and territories within those states, policies were rewritten to alleviate this financial strain. As an example, as a relatively new employee in 1947, I worked many weekends assisting in the task of rewriting Illinois policies from 80% collision—"Full Service"—policies to $50 Deductible Collision policies.)

The Full Service policy basically was intended as a complete coverage policy except it carried an 80% collision coverage provision with the company paying all but the 20% paid by the policyholder. The Special Service policy was for full service except it provided for a $25 or $50 deductible collision provision which was deducted from the settlement payment. Standard Service was basically the same policy without any collision coverage. The least coverage and least expensive policy was the

Basic Service policy which included liability coverage, property damage, and $500 medical pay coverage.[147]

So what was Plan II?. It was a plan for the major reorganization of the work processing structure of the company. Plan II was an "operational scheme" devised by the Survey and Procedures Committee named by Mecherle composed of Ernie Warmoth as chairman, Royal Bartrum, Carl Marquardt, Lewis Cox, Arthur Dierkes, and Kenneth McLean.[24] Others assisting this committee were Keith Jump, A. L. Baumann, Charles Beadles, Arthur Eiff, Ivan Pierce, Herschel Holmes, Lewis Poston, and Merlin Walker.

This committee and plan was an outgrowth of an overall corporate concept formulated in 1946 by a committee headed by Edward B. Rust, Sr. which also proposed the establishment of the new Branch Offices explained earlier.

The work processing objective of Plan II centered around the restructuring of the Operating Divisions. As it turned out, this basic plan was not altered again as to its concept until the "Team Concept" was introduced in the late 1970's and early 1980's. However, the introduction of computerization in 1955 caused many changes in employee positions and job descriptions due to the technical requirements demanded by the computer environment. (Although Plan II existed in concept for more than 30 years, because of the advent of the computer era in 1955, I have limited the discussion of Plan II to the era from 1947 to 1954.)

The basic ingredients of Plan II can best be described by quoting "The Farmer From Merna":

> "At the time Plan Two was evolved State Farm operated on the basis of four large functional departments: agency, underwriting, claims, and investments. (I think the author meant accounting rather than investments.) Two of these—underwriting and claims—had grown to such size that they had become cumbersome and unmanageable when subjected to undue pressure. The new plan was to break this old system down and set up a more flexible one in its place.
>
> "After much study it was agreed that the way to do this most efficiently was to subdivide the organization into small geographical units. Each subdivision would do its own underwriting, write its policies, handle its premium collections, adjust its claims and render general service to members in its areas. It would also do initial key-punch accounting. Each unit was to be in the charge of a qualified manager, trained by State Farm in State Farm methods.
>
> "There were a number of advantages to this system over that then in use. The two most fundamental to the continued smooth running of State Farm business were these: It

brought high-level supervision closer to the employees. It brought together the related underwriting and claims functions of an area and gave these departments much easier and quicker access to local information necessary to their efficient operation."

That is a general explanation of the overall design objectives. However, the details of the plan will show that the make up of the new operating divisions were radically changed with the establishment of three Sections: the Underwriting Section, Claims Section, and Service Section. As explained in "The Farmer From Merna", this placed the Underwriting, Claims, and new Service functions into a single operating division for a geographical area such as one state or at that time in a division of multiple states. Ultimately, multiple divisions were created in a number of states.

Two very important aspects of this plan were that underwriting and claims functions were no longer departments but Sections within an Operating Division, and secondly, seven different policyholder servicing Units were established within the new Service Section. Each of the three sections were to be managed by a Superintendent, e.g. Illinois Underwriting Superintendent, Illinois Claims Superintendent, and Illinois Service Superintendent within the Illinois Operating Division. Other divisions were similarly organized.

The most far-reaching of those two changes as to its effect on record keeping methods and flows of work was the establishment of the Service Section with its seven units of policyholder servicing responsibilities. The initial seven Units were: Mail, File, X-card, Rate, General Correspondence, Miscellaneous Correspondence, and Bookkeeping. Bookkeeping was a new unit under the Operating Division concept. (By 1950, the seven units had been consolidated into five units by combining the Mail and File Units into the "Mail & File Unit" and the General and Miscellaneous Correspondence Units into the "Correspondence Unit".

The most important aspect of the creation of those clerical-type units is that no longer would the Underwriting, Claims, and Premium Divisions perform those clerical functions nor would the Accounting Department be responsible for initial application and x-card key punching and key punch verification. All of those functions would now be in the Service Sections which would handle them, respectively, for their corresponding Operating Divisions and the Accounting Department. This arrangement worked well from the very beginning and went a long way toward solving the problems that the Premium Department Plan failed to solve. Obviously, as long as there was a demand for the application or x-card at simultaneous locations, e.g. the Underwriter and Correspondence Clerk, there would still be a need for the "hunt list". But it did mean that the two individuals requiring the application or x-card were in the same working area. Similarly, it certainly avoided the logistics problem of these files being in an entirely different department, e.g. the Premium or Accounting Department, when needed urgently by an underwriter trying to solve a problem because of a phone call from an agent. All files and x-cards would now be in the same division and in the same room at all times, with very few exceptions.

As you can surmise, this was a turbulent period with many "balls in the air" at the same time. Plan II was being implemented in stages, requiring careful planning of the logistics requirements, plus the selection of new superintendents for the newly formed Sections, and new supervisors for the newly formed Units of the Service Section.

The first Operating Division to be established under the new plan was the Indiana Division,[22] then located on the 11th floor of the Home Office Building. Selected to manage this "guinea pig" division were Keith Jump, Manager; Charles Beadles, Asst. Manager, who was a temporary Service Superintendent over the new Service Section units; John Leininger, Underwriting Superintendent; and Arthur Cummins, Claims Superintendent.

This new division was formed in August, 1947 at a time when the problems described above were "crying" for a solution. Plan II did provide that solution for that period as evidenced by quoting excerpts from a speech given in 1949 to a group of Indiana agents by Royal Bartrum, who later became Vice President, General Claims:

> "When we started on Plan II (countrywide) we had 2471 employees handling 1,284,704 policies and we were far behind in our work. During September, 1949, we were carrying about 80% of one day's work on hand, had 1886 employees handling 1,541,361 policies. In other words we had cleaned up our work and with a 24% reduction in personnel were handling a policy load increased by 20%.
>
> "To state it another way—when we started on Plan II it took an employee for every 520 policies. Today it takes an employee for every 817 policies. An increase in policy load per employee of 57%.
>
> "When Indiana started on Plan II, August 1947, it had 145 employees handling 70,886 policies and it was behind in its work.
>
> "During September, 1949, Indiana had 101 employees handling 79,928 policies. In other words, Indiana has cleaned up its work and with a 30% reduction in personnel is handling a policy load increased by 13%.
>
> "To state it another way—when Indiana started on Plan II it took an employee for every 489 policies. Today it takes an employee for every 791 policies. An increase in policy load per employee of 62%."

I might add that I remember this era vividly. Everyone was much happier because of the reduction in "boring" work hunting for "lost" or "floating" files and the additional correspondence required to salve unhappy agents including apologies for the late handling of those files. I must add that although it required fewer employees to handle an equivalent number of policies, no one was "fired" or "lost their job" because of the efficiencies of the new plan. These employees were absorbed by the need for more employees required to meet the phenomenal increase in total policies in force. For example, by 1950, there were 6 offices, 2868 employees, 6558 agents, 1,810,794 automobile policies which represented nearly a 50% increase in 5 years while the Life and Fire Companies had doubled their size during that same period. (The difference between the 1886 employees in 1949 as mentioned by Bartrum and the 2868 above was the difference of those in the operating divisions only versus the total in ALL Auto Company departments. Also, the 6558 agents did represent a reduction of nearly 1000 agents from the 1945 total of 7573 agents. This might represent the company's reduction of part-time agents that was occurring at about that time.)

After Indiana was organized under Plan II in August, 1947, the two new Branch Offices, i.e. North Central and West Central, opened under the old Premium Department Plan and were converted later to the new plan. The conversion of these two offices, the Western Office, and the remaining Home Office divisions extended well into 1948. Inasmuch as precise information regarding the Canadian Office is not available, it is my belief based on my visit to that office a few years later when it was still a very small office, that it operated under its own unique plan for many years thereafter.

The remaining Home Office divisions to be converted along with the names of the manager and superintendents at the time of conversion were:

Division	**Manager**	**Und. Supt.**	**Service Supt.**	**Claims Supt.**
Illinois	C. Marquardt	R. Bagley	L. Poston	W.H. Love
Virginia	E. Breyvogel	V. Johnston	H. Holmes*	C. Dunnuck
Michigan	C .Beadles	J. Phelps	C. Sturgeon	W. Fitz
Missouri	V. Fehringer	E. Lukes	J.P. Eicher	G. Melvain
S. Eastern	C. Adam	C. Brubaker	H. Holmes*	J. Brewer
Eastern**	A. Eiff	T. Slanec	H. Watchinski	S. Graham
S. Western	J. Workman	F. Michaels	J. Kearney	R.Hume & R. Noel
Wisconsin	C. Brubaker	R. Herr	R. Poorman	A. Meixner
Penn.	W. Hough	W. Freeman	E. Oertwig	C. Christiansen

* Because the Service Sections were new, the Service Superintendents from divisions which had previous experience were sometimes transferred to divisions being converted later. Herschel Holmes fell into that category.

** This division had not been officially named at the time of the conversion. It included the states of West Virginia, Delaware, Maryland, and District of Columbia and was later named as the Eastern Division.

Other divisions were organized and/or converted shortly thereafter because of the substantial growth and volatility at that time. However, those were the initial Plan II divisions.

Planning and Research Department Established

Out of all of this came many new opportunities and the need for a new general department responsible for the overall coordination of this new concept on a corporate basis. The new department established for this purpose was the "Planning & Research Department". The first and long time Director and later Vice President of this new department was Carl Marquardt who assumed this position in November,[25] 1947 after a short stint of one month as the first manager of the Illinois Division under Plan II. Sumner Roberts was assigned as Assistant Manager under Marquardt with the expressed purpose of learning the intricacies of managing a division after which Marquardt would establish a new procedures department.[23]

Marquardt was chosen by A. H. Rust and the Operating Committee "to set up a department to write and maintain a Work Process Manual for the Auto Company to (standardize) advantageously all processes and procedures and establish a centralized point of information concerning them. His office is on 7." This quotation was taken from the ALFI NEWS dated February 29, 1949. The new department was named the Planning & Research Department until August, 1965, when it was reorganized and renamed as the Service and Systems Department which it has remained.

When Marquardt established Planning and Research, the entire department consisted of Marquardt and Bess Dragoo, his secretary, occupying two offices on the seventh floor south, in the current Fire Building. This portion of the floor was shared with the Investment Department under Kenneth Noll, Vice President of Investments, who was a son-in-law of the founder, George J. Mecherle.

Shortly thereafter Daniel Gross was added as the department's third employee and Kenneth Decker as the fourth. When the Michigan Office opened in 1950, Gross was named as an administrative assistant to Charles Beadles, Branch Manager. Decker resigned from the company within the next three years.

Early in 1948, Marquardt asked Arthur Dierkes to approach me in the Bloomington Hotel, on Center Street, where I was Policy Writing Office Manager, about becoming the fifth employee of the Planning & Research Department. I refused the offer. What a mistake that might have been! Luckily, Marquardt persisted by asking both Sumner Roberts, then manager of the Illinois Division, and Paul Mitzner, newly named Personnel Department Manager, to convince me of my mistake. Roberts gave me a bit of sage advice: "Sometimes some one else knows better than you do what is best for you". I took the advice (hint), discussed the job with Marquardt, trained Larry Theis as my replacement, and joined Planning & Research on March 29, 1948. I never regretted that decision. Marquardt always treated me with fairness, respect and a great amount of support. (Larry Theis later assumed a supervisory position in the Eastern Office and after a very few years in that position passed away in an extremely untimely death.)

In January, 1948, other significant corporate management changes included:

Arthur Baumann was named as Assistant Comptroller.
Lewis L. Cox was named Auditor.
Arthur Dierkes transferred back to the General Accounting Department as Assistant Auditor.
Paul Mitzner, was hired as the new Personnel Department Manager.

By 1950, the Planning & Research Department had taken on many more responsibilities than merely writing and publishing the Work Processing Manual, albeit that was the springboard by which the department attained credibility. It must be understood that prior to 1948, every department wrote its own "operating" procedures. With Planning & Research assigned to this task, it had to prove that it was capable of discharging this responsibility with dispatch and with the interests of the user departments foremost in mind. This it did with considerable success for which much of the credit must be given to the Underwriting and Claims Departments of that era for their outstanding cooperation. Without it the whole effort would have been a disaster.

Besides merely writing the Work Process Manual as originally charged by Adlai Rust, the department almost immediately became the general department for the Service Sections under Plan II. Shortly, it began "auditing" (a poor choice of words, later called "surveying"), the procedures it had written in the Work Process Manual and other "memos" which it initiated.

The very first procedure "audit" was a memorable one. Four of us, Clayton Sturgeon, Lewis Poston, Robin Leatherman and Myron Willke made up this very first team. Willke was asked to be the leader—a difficult task because we were pioneering this operation. In addition, the Western Office had formulated its own procedures and we were asking them to change to a "standard" with which they did not always agree. That, of course, was a natural reaction.

We left Bloomington by train on May 4, 1951 and did not return until May 27th—virtually the whole month of May. When we returned we reported to the State Farm "Operations Committee" headed by Royal "Bud" Bartrum. One of the unique items on which we reported was the use of the Muzak System which the Western Office had installed and which we recommended for the Home Office. The Operations Committee was impressed with our enthusiasm of "Muzak" and shortly it was also installed throughout the Home Office building. It must be emphasized for the record that the Western Office must be given credit for Muzak at State Farm—we were merely the messengers.

This was merely the beginning of one of the many tasks that the Planning & Research Department was to perform. Ultimately, it became the cornerstone of the data processing effort in the Auto Company, the primary reason for this book.

The year 1950 began a decade that was somewhat of a paradox because it was turbulent as to the world political scene but with the Eisenhower years from 1952 through 1960, it was rather placid economically. The turbulence centered around the Korean War, the firing of General Douglas McArthur by President Truman, the beginning of the space age via the launching of the first space satellite, the "Sputnik", by the USSR, the shooting down of an American spy plane with Gary Powers as the pilot, and the beginning of the "cold war" between the two superpowers, the USA and USSR. The cold war, involving a serious European arms confrontation between NATO forces in Western Europe and the Warsaw Pact nations of Eastern Europe, was so serious in the 1950's that many inhabitants of Europe and the USA built concrete and underground shelters and stocked them with life's necessities in the event of a nuclear war. Although the cold war began to dissipate with the destruction of the Berlin wall, it is difficult to believe today that the confrontation was ever that serious.

The situation was aggravated by other serious diplomatic crises during the 1950's under Eisenhower including a crisis over the Suez Canal which Eisenhower solved with a firm hand by the surprise confrontation of the USA against the British and French which defused the situation. In 1958 Eisenhower also landed troops in Lebanon to stop other Arabian nations from taking over that small country. His decisive action stopped the Arabs immediately but no actual fighting occurred. Within a few months, Eisenhower removed the USA troops. Unfortunately, as is general knowledge, the cold war only got worse with the building of the Berlin wall and Russia's iron-fisted control of the East European countries.

From the viewpoint of economics, it was generally a stable period with the thrust being quite conservative, and at times perhaps "lethargic", being neither hot nor cold, and therefore quite reflective of the quiet leadership of President Eisenhower and the "Eisenhower years". It was a refreshing change for many of us after nearly a generation of turbulence caused by the Depression and World War II.

It did have its notable moments when President Truman turned over the reins to President Eisenhower in a politically "cool" atmosphere; and, when Eisenhower was hospitalized and the reins of government were basically thrust into the hands of a not-too-popular Vice President Richard Nixon. Nixon's famous "Checkers" speech in which he used his dog Checkers as a television "prop" probably was the primary vehicle by which he saved his political career as Eisenhower's running mate in the 1952 election campaign.

But what about State Farm during that decade? As the period unfolds, you will see it was a very exciting and changing period as to the record keeping mechanics and procedures. It was during this decade when electronic computers were introduced in most of the large companies in the United States and Europe. It was a period of real pioneering in the use of these computers, which began slowly in the middle years of the decade and reached a very high pitch as the decade faded into the 1960's.

So let us go back to the early 1950's and set the stage for the coming computer age in State Farm Mutual. By 1950, six State Farm Branch Offices had been established or were being established with a total of 2868 employees and 6558 agents,[6] servicing over 1,810,000 automobile policies nearly $400 million of life insurance in force, and over $5 million of direct fire premium written. Although it is obvious from these figures that the health of the State Farm Companies was in great shape, unfortunately that was not true of its founder and president, George J. Mecherle, who passed away on May 10, 1951. He was succeeded by his eldest son, Ramond P. Mecherle.

Plan II was well established as was the Planning & Research Department. The individuals working in the department on January 1, 1950 were:

Name	Job Title
C. A. Marquardt	Director
Bess Dragoo	Secretary
Dan Gross	Methods & Procedures Analyst
Kenneth Decker	Methods & Procedures Analyst
Myron Willke	Methods & Procedures Analyst
Wayne Bradley	Methods & Procedures Analyst
Robin Leatherman	Methods & Procedures Analyst
Louise Roberts	Methods & Procedures Analyst
Elaine Meyer	Methods & Procedures Analyst
Margaret Ritter	Forms Librarian
Maude Gee	Stenographer

The Methods & Procedures Analysts were assigned separate responsibilities in the research, development, writing, and later surveying the implementation, of the various chapters of the Work Process Manual. Louise Roberts, (Mrs. Sumner Roberts) was responsible for the Claims Department procedures; Kenneth Decker, Mail & File, and X-Card procedures; Dan Gross, Agency procedures; Wayne Bradley, Correspondence procedures; Robin Leatherman, Bookkeeping procedures, and Willke had Rating procedures.

This was a new endeavor requiring extensive pioneering to determine the most feasible, accurate, and acceptable procedures for the various user divisions, sections, and units. Also, to assure complete harmony of purpose between the Planning & Research Department and the users, a number of procedure committees were formed to review and assist the Planning & Research analysts with their important pioneering tasks. Those initial committees and their members were:

Committee	Name Members
General Procedures	C. A. Marquardt, Chairman
(This was the overview	E. B. Rust, Sr.
committee.)	R. J. Bartrum
	Sumner Roberts
Claims Procedures	C. H. Foster, Chairman
	Art Brenneman
	Meredith Nelson
Underwriting Procedures	Clark Brubaker, Chairman
	Francis Michaels
	Wendell Freeman
Bookkeeping Procedures	Art Eiff, Chairman
	Joe Kearney
	Clayton Sturgeon*
Rate Procedures	Vincent Fehringer, Chairman
	Lewis Poston
	Robert Poorman
General Correspondence Procedures	Cecil Adam, Chairman
	Vernon Johnston
Misc. Correspondence Procedures	E. A. Breyvogel, Chairman
	Edward Oertwig
Mail Procedures	Robert Noel, Chairman
	J. P. Eicher
File Procedures	W. H. Love, Chairman
	Herschel Holmes
X-card Procedures	Wayne Hough, Chairman
	H. W. Watchinski
	Paul McNab

* Clayton Sturgeon was an operating division representative on the Bookkeeping committee before being promoted to Assistant Director of Planning & Research in December, 1952.

Upon its initial issuance, the Work Process Manual was placed in a large three ring binder. Every individual in the Home Office Divisions and Branch Offices, whose daily work dealt with these procedures, was issued that portion of the manual which focused on that area of responsibility. Heads of Departments, Division Managers and other supervisory personnel were issued complete manuals. This was a sizeable task for the eleven individuals assigned the task for its authorship, review with the divisional committees, and ultimate publication nationwide of this manual considering its continuous flux of change. However, additional employees were added extremely slowly during the early 1950's.

By 1953, one of the more important changes involving work processing and record keeping was the installation of the IBM 602A Punch Card Calculator in the General Accounting Department at a rental cost of $245.00 per month replacing the rudimentary IBM 602 Calculator. Another important change was the introduction of the Multigraph Machine with it Multigraph Master for printing the policy declarations page, policy Identification Card, the 4x6 x-card, and the 3x5 master I.D. cards.

The "master card" became a very unique underwriting device when it was used to locate the names of a dozen or so unsavory characters, including one of the Al Capone gang in Chicago,[48] who had quite inadvertently become policyholders. Obviously, they were cancelled "pronto". The principal changes in the Accounting Department which affected mechanical record keeping processes, in addition to the IBM 602A, were the introduction of the IBM 407 Tabulator renting for about $1000 per month; however, the "workhorses" of that time remained the IBM 402-403, 405 and 416 tabulators. By that time Plan II had moved all application and x-card key punching to the Bookkeeping Units of the Service Sections within the Operating Divisions throughout the company.

Among the important operational changes at this time was the shipment of all new and renewal applications directly to the Home Office and Branch Office operating divisions and no longer through the State Agency Offices which had been the practice from the date that the company was founded.

The Planning & Research Department was growing slowly and was moved from the 7th Floor to the 5th floor—south on May 5, 1952. Initially, the entire department fit into three rooms along the south wall on the fifth floor. Marquardt occupied the southeast office, with Bess Dragoo and Hazel Dalton, Sturgeon's secretary, occupying a room west of Marquardt's office, and the remainder of the department occupying a longer room along the south wall immediately west of the secretaries' room. Gradually this arrangement was insufficient as more members were added to the department. (A complete list of the members can be found later in this chapter.)

Events Leading To Formation Of Electronic Research Unit

Unquestionably, the most important change taking shape gradually at that time was the attention and study being given to the importance of the new computers which were gaining publicity and were beginning to be marketed. The Univac I caught the attention of Robin Leatherman, who at this time was responsible for writing the Bookkeeping procedures for the Work Process Manual. He was so enamored by this new but very expensive computer, that he "pushed" Carl Marquardt and E. B.

Rust, Sr. to the point where they were "turned off" by this constant pressure and Leatherman resigned from the company to accept a job in Cleveland, Ohio. This created an opportunity for me since I was placed in charge of Bookkeeping procedures and started to pursue the computer age from a much more conservative angle.

Early in 1953, as an outgrowth of my responsibility for writing Bookkeeping Unit procedures, I began to see the potential of the new computers doing much of the work that rate clerks, bookkeepers, and key punchers were then doing. Having a reasonably inquisitive mind, completely on my own initiative without Marquardt's or anyone's knowledge, I began studying the 602A manuals at home after working hours and wrote the first diagrams for the 602A Calculator for the task of adding and balancing application worksheets, then performed manually by the Rating and Bookkeeping Units. That work was brought to Marquardt's attention and to his eternal credit he became enthusiastic about its potential, encouraged it, and made arrangements with the General Accounting Department to allow testing those wiring diagrams on the IBM 602A which was under General Accounting control. My first day of testing a 602A calculator and first day ever on any computer which lead to my life-long career in computers was June 25, 1953.[26]

Through the grape vine I learned that someone else in the State Farm Life Company was also experimenting in a similar manner on the 602A with Life Company projects. Upon investigation, I found that to be Frank Warber and as eager as I was in exchanging views about our respective endeavors and accompanying problems. At that time we were among the very few that knew anything about computers in the State Farm companies. I am sure Warber would agree that our relationship was beneficial for both of us since we were very much in a situation of the "blind leading the blind".

My project turned out to be a difficult undertaking requiring scores of hours of testing and pioneering on a machine really not powerful enough to handle the task that I was attempting to place on it. This "task" was a worksheet crossfooting and balancing experiment using information supplied to me by the Iowa Division, which for many years thereafter became the "Experimental Division" for most of our early computer experiments during those early years.

This experiment ultimately became operationally as the IBM 604 Program and featured IBM's newer 604 calculator. This program resulted in the elimination of all manual worksheet additions, balancing, age group calculations, and pro-rating, but no actual rating, and necessitated the transfer of all work sheet preparation to one unit—the Rating Unit. The initial experiment involving the wiring of the IBM 602A "board", was a complex combination of machine timing, not enough components on the calculator, and so many wires on a board that a special pen-shaped flashlight had to be used to find the "holes" in the wiring board. The overloaded wiring board and therefore overloaded calculator did not work particularly well since it would sometimes enter an "interlock" and do nothing or was entirely too slow.

Marquardt and I together with the General Accounting Department agreed to transfer my work to the newer IBM 604 Calculator, which rented for $550 per month, and had been recently installed in the General Accounting Department on the second floor of the Home Office Building. State Farm had chosen not to install the IBM 603 Electronic Multiplier, somewhat more powerful than the 602A but less powerful and much less functional than the 604. The 603 was limited basically to multiplying one number by another number and punching the result into the same card.[39] It was not capable of division or crossfooting. Obviously, such limited capability did not satisfy our needs. Despite this limitation, the IBM 603 has the distinction of being the first manufactured electronic digital calculating machine.

It is important to point out that the calculators such as the IBM 602A and 604 were not "stored" program computers. They were punched-card calculators. The 602A had mechanical counters as memory devices, electric relays for switching purposes, and every function performed by the 602A had to be performed through an electrically timed impulse via a low voltage, low amperage system transferred to the various components over small plugable and unplugable wires. The 604 had full electronic calculating capabilities, but still was a calculator—not a computer.[39]

Both the 602A and 604 systems required literally hundreds of wires to fit a "wiring board" which was about 14" x 12" for the 602A and 6" x 10" for the 604—each with the plugable holes approximately ⅜" apart vertically and horizontally. I mention this detail only to give you a feel for the type of "programming" that was required on those early systems. It was more engineering than programming!

To emphasize this point, while I was about to conclude the initial testing of the experimental work prepared for me by the Iowa Division, I invited the Iowa Division personnel to witness the "first official" computer run of the 604 Program through the 604 located on the second floor. Invited were Clark Brubaker, Division Manager and others who had prepared the punch cards for the test. I was quite confident and ecstatic—but that was very short-lived because as I entered the punch cards and pressed the start button on the 604, nothing resulted except scores of mispunched cards that appeared as if they were to be used as a sieve. With great embarrassment, the experiment failed and the level of confidence, especially my own, sagged tragically!

After successfully completing the experimental diagramming, programming, testing, and procedural outline for this "604 Program" as it became known, it was necessary that tabulating equipment be used for printing the results of the calculations and therefore I taught myself the wiring and testing of the IBM 402-403 Tabulator and later the IBM 407 Tabulator. I would be terribly remiss if I failed to give great credit to Arnold Nygaard, IBM Customer Engineer, who gave me a great amount of assistance, much of it in the evenings on his own time, during this pioneering period from 1953 on. Nygaard knew the inner timing combinations which often were in conflict which caused system "interlocks" and in that manner was an immeasurable help to me in those early years.

It was in the fall of 1953 that Marquardt directed me to examine the Univac I in Philadelphia. As discussed in Chapter II earlier, this was an exciting machine, poorly demonstrated in a warehouse behind Connie Mack baseball stadium. It was simply too costly, too large, not well documented as to the physical room requirements, and even worse, lacked quality programming training material for use by potential customers. Although these problems could have been overcome with a large capital investment in both machines and manpower, it was absolutely not the proper approach for State Farm as a data processing novice.

While I, as a member of Planning & Research, was wiring and testing the IBM 602A and 604 Calculators, the General Accounting Department, under the leadership of "Lew" Cox, Auditor, Herman Salch, Tabulating Supervisor, and with the expertise and considerable assistance of James Hickey, was experimenting with another IBM system named the Card Programmed Calculator (CPC). This system was housed and was being tested in an entirely separate building, the Sweeting Building north of the Second Presbyterian Church on East Street, about a block north of the Home Office Building. This was being done in a rather surreptitious atmosphere. The evolvement of the existence of this project came as a surprise to the Planning & Research Department and to much of the company's top management.

The configuration of this system was that it had an IBM 604 as its arithmetic unit with a card reader, a card punch, an electromechanical memory, and a Type 407 Tabulator—all attached together via cables. The system concept was to handle each transaction in its entirety including the printing of forms as each set of IBM transaction cards were read into the system. It was a very early attempt to do a primitive job of "on-line" processing. The concept was fine but the capability was severely lacking. Because of the attachment of several slow machines to the calculator, the entire system was entirely too slow and therefore unproductive for its higher cost. It was too slow and costly because the system was limited to the speed of its slowest component, which at different times might have been any one of its attached components depending on the complexity of the transaction being processed.

Obviously, with two departments experimenting with two entirely different machines with different concepts, State Farm Mutual needed to examine the relative attributes of those two systems and decide on the direction it should go if it were to compete successfully in the blossoming computer age. This it did with careful scrutiny and decisiveness in the fall of 1954. But let us go back to 1952 and review the important steps taken to reach this decision.

In order that a fair, unbiased, and objective decision could be reached by top management, much work had to be done at the "technical" levels of the departments involved in supplying management with the detailed information needed for such an important decision. In the Planning & Research Department that task was assigned to me.

Besides the work on the IBM 602A and 604 systems mentioned earlier, I attended a number of technical schools on the various components of the systems in question along with additional schools on the basic Accounting machines with which I had to become knowledgeable. Included were technical and programming schools on the basic capabilities of the Card Programmed Calculator (CPC) and the IBM 650 Systems as well as studying the details of these two systems many nights at home.

In order to acquire the books and schooling needed to learn about the details of those computers, events occurred in rapid succession in mid-December, 1952. On December 14, 1952, I visited with the IBM sales representative for State Farm, Jack Clatfelter of the IBM Peoria Office, who arranged for my first IBM schooling to be held in Peoria on the very next day. It certainly was a period of great anticipation for me in view of the decisions I knew were about to face us. Over the next few months I had additional schooling in Peoria about IBM's computers of that era.

On May 22, 1953, Marquardt and I met with Art Baumann, then Assistant Comptroller, Auto Company, about the existence of the two competing systems and their relative capabilities. As a result of this meeting, many more meetings were held over the next 18 months with G. B. Brown, Comptroller; A. L. Baumann, Asst. Auditor; L. L. Cox, Chief Auditor; and other members of the General Accounting and Planning & Research Departments. Among those attending these additional meetings were Art Dierkes, Herman Salch, and James Hickey of General Accounting and Clayton Sturgeon, Assistant Director of Planning & Research.

By December 1953, Planning & Research had reached its decision that the IBM 650 was a faster, and much more capable machine including the stored program concept not available on the CPC. We had also decided that the first step towards computerization should be the installation of the 604 Program which would enable the Branch Offices to get a "feel" for a modest sized electronic calculator which would then become the "learning device" as we moved into the larger, more complex 650 Systems. This then became the Planning & Research Plan as it discussed the alternatives with General Accounting and top management.

On January 11, 1954, in an important top level management meeting including Marquardt and Brown, it was decided to cancel ten IBM CPC systems which were on order for the Branch Office and Home Office Accounting Departments. One CPC system, which was already installed in the Sweeting Building, was retained for experimentation and testing. The continuing work and testing of the CPC was done exclusively by the General Accounting Department personnel.

Much of the remainder of 1954 was spent by the Accounting Department continuing its experimentation on the CPC system. During that same time frame, I spent many hours wiring boards, testing, and completing the "604 Program", studying manuals and attending schools for the more advanced IBM 650 system.

The IBM 650 was described by IBM as "a serial, decimal, stored-program computer. A word, which had a fixed length of ten decimal digits and a sign,[27] could contain one instruction or one number . . . The magnetic drum, (its memory) which had a capacity of 2000 words, rotated at the unusually high speed of 12,500 rpm. The drum also served as an I/O buffer (an input and output temporary storage area) for the card reader and punch, the only I/O units provided initially." (The input and output on the initial 650's was entered exclusively via IBM punched cards.)

The 650 was labeled by IBM as the "Type 50 Magnetic Drum Calculator" because its "forte" was the revolving drum at a speed exceeding that of its competitors. Historical literature discussing its announcement on July 2, 1953,[31] stated: "The 650 had emerged as the right machine at the right time. It was very competitive, not only in performance and price, but also in its concept as a small, reliable machine, offering the versatility of a stored-program computer in a punched-card environment." State Farm's experience proved this statement to be accurate.

This was an extremely successful computer which was not a truly electronic computer in the mold of the Univac I, but did have many of the same capabilities, although much slower because of the drum storage. IBM later added a magnetic disk unit, the 305 RAMAC, and magnetic tape drives—both options which State Farm Mutual never chose to adopt. The 650's chosen by State Farm Mutual were exclusively card-oriented machines. The 650's were replaced in the early 1960's by the IBM 1410 and 1401 Tape/Ramac Systems of which very much more will be revealed in Chapter III. (Until IBM announced the 1400 Series systems, it was our intention to upgrade the 650 card-oriented computer into a Tape/Ramac system.)

Let us go back to late 1953 and review some of the questions and uncertainties that many individuals in the company wrestled with in regards to the whole question about the validity of computers for our industry.

Remember this entire effort involving computer programming and testing began in 1953 and continued throughout 1954 with basically only two individuals working on separate projects. James Hickey was working with the IBM CPC system and I was working on the IBM 602A and 604 calculators. (By early 1954, the 602A was abandoned in favor of the 604.) Besides wiring boards for the 604, boards had to be wired for the IBM 402, 407, and 416 tabulators in order for them to print the output produced on the 604 system, along with writing the memoranda explaining the results of this work. Fortunately, Marquardt was strongly supportive of this effort at a time when many doubts existed about the advocacy of this concept.

One of the very serious obstacles that we encountered as early as 1953 and had to overcome was the fact that with the coming of computers and their growing reputation of doing "miraculous" tasks, we had to straddle carefully a precarious line of explaining to company executives, middle management, and other employees the "true" potential of computers and at the same time convince them that it was going to benefit the company and all employees without replacing them personally or destroying their future. This was not an easy task. (I am sure our own enthusiasm for this new computer potential discussed in private with selected individuals did not help our cause, when considering the role of the ever-present "grape vine".)

Perhaps the most serious consideration for top management was that this was the beginning of a "never before" impact of relative high cost expenditures on equipment that was untested and unproven for our industry. During one of my speeches in 1953, explaining that the IBM 604, renting at $550 per month, would cost nearly $7000 per year per Branch Office and about $100,000 for the entire company (a miniscule investment in today's environment), one of our most ardent supporters, Richard Stockton, who later became Chairman of the Board, asked a very legitimate and crucial question: "Could we realistically afford this type of an investment?" In other words, he was asking, "Can we afford this rather expensive adventure when we have not spent this kind of money before on an unproven product?" This was a very pertinent question indeed for 1953!

In 1954, State Farm lost its second president, Ramond P. Mecherle, who died on May 15, 1954. President Mecherle was succeeded by Adlai H. Rust. Fortunately, President Adlai Rust, E. B. Rust, Sr. and other top company executives were solidly behind our efforts and without their strong support State Farm would not have led the way to computerization among insurance companies, as it surely did, in those early years of data processing pioneering.

To accomplish this task, Marquardt spoke to the top executives privately, in committee meetings, and at conferences while I wrote memoranda and spoke about the technical and personal aspects of the potential 604 Program at Managers' and Superintendents' conferences throughout 1954, even before the decision was made as to the type of computer the company would eventually endorse.

The speech which apparently laid the foundation for company acceptance was one delivered, on February 1, 1954, to company executives and key members of middle management on the objectives, costs, training, necessary preparations, and possible overall impact of the 604 Program on the company, if implemented. Among the points stressed was the need to eliminate the prevailing "do it manually" complex of that era. We also stressed that the new computers would "improve" employees' jobs, not eliminate them, especially at that early stage. Encouragement was given for supervisors and employees to start thinking of innovations that could be performed by machines and that these machines could do these new work elements faster and more accurately thereby making State Farm more competitive which would benefit everyone by making all jobs more secure. Finally we stressed that without the full support of all employees, State Farm's then predominant position in the market place could suffer and all of us would have a "rough time" competing in a world that was beginning to move inexorably into the computer age. This was the type of "salesmanship" that was so important at that time, and fortunately was very well received. It initiated a very positive atmosphere about computers at State Farm which has remained its "hallmark" for more than 35 years.

The fundamental and "realistic" task, for all of us involved at that time, was to prove to a few "skeptics", including some in our own Planning & Research Department, that the claims we were making about this new "phenomenon" could be proven by actual performance! I was told early this year, 1991, as I was writing this book, of the skepticism that one of those early employees felt 35 years ago concerning the forecasts we made about the potential of those early computers and those on the drawing boards for future unveiling. He also said, to his amazement, those predicted potentials were not only realized but have been exceeded.

Between June 1, 1954 and December 15, 1954, many very important meetings were held with E. B. Rust, Sr., G. B. Brown, A. L. Baumann, and other members of the General Accounting Department to resolve the issue of whether State Farm Mutual should adopt the Planning & Research Plan based on the IBM 604 & 650 systems or install the IBM CPC system espoused by General Accounting. I should add that everyone involved in this particular decision making process were solidly supportive of the new computer concepts and were not among the skeptics alluded to above. The question for them was simply which computer would do the best job for State Farm.

On June 25, 1954, Marquardt met privately with Brown to discuss a memo which I had written explaining the 604 Program. On June 16, E. B. Rust, Sr., Executive Vice President, was briefed by Planning and Research on the relative merits of the systems involved. (Incidental to the ongoing discussions, Marquardt was named Vice President-Planning & Research on July 30, 1954.) On October 19, 1954, in a meeting attended by General Accounting and Planning & Research management personnel in the office of G. B. Brown, I was directed to write a comprehensive memo describing the pros and cons of both the CPC and 604-650 plans as objectively as possible. This memo was completed, reviewed with James Hickey, who was testing the CPC system for General Accounting, and later presented to all parties interested in the merits of these two systems.

In the fall of 1954, it became imperative that an overall committee composed of members from the Auto, Life, and Fire Companies be established for the distinct purpose of coordinating efforts and resolving differences within or between the three companies which pertained to questions regarding this new device, the electronic computer, and what should be State Farm's response and direction regarding those new machines.

To serve that purpose, the Electronics Committee was formed composed of E. B. Rust, Sr., Frank Mittelbusher, Burnell Miller, C. A. Marquardt, Roy Thoele, A. L. Baumann, and L. L. Cox. No records, available to me, indicate who was chairman of that new committee, but it can be assumed that E. B. Rust, Sr. was its first chairman.

A very important meeting of the Electronics Committee was convened on December 15, 1954 to review my memo regarding the merits of the two systems, and to reach a final decision. The decision reached can best be explained by quoting from the memo published on that date by G. B. Brown, Comptroller,[28] documenting this decision for interested executives of the Auto, Life and Fire Companies:

"1. We will abandon any further experimentation or work with the CPC machine and will arrange for its immediate return to the International Business Machines Corporation.

2. We will complete the write-up of procedures developed on the CPC so that it will be readily available for us in programming for the 650's.

3. We should immediately order sufficient 604s so that we will have on hand, as rapidly as possible, a sufficient number of these machines to completely equip all Branch Offices, and insure completion of the installation of these 604s on or before December 1, 1955.

4. We should order immediately sufficient 650s to properly equip the entire company as rapidly as possible. It is our expectation that the first of these machines, which has been on order for some time, will be delivered in January 1956.

5. Starting immediately after January first we should inaugurate our study and programming for the 650s, keeping in mind that we wish to have this work completed and tested by the IBM Corporation (electronic testing only) and ready for the installation and use of the first 650 machine in January 1956."

In a similar memo dated on the same date, Brown sent a second message to Wendell Clithero, IBM Branch Manager,[29] explaining the plan, and for IBM to direct all contacts regarding this plan to C. A. Marquardt, who was chosen to direct this effort. (Although State Farm had ordered one test system some months earlier, the first 650 was delivered to the John Hancock Mutual Insurance Company in Boston in December, 1954.)

With this final flurry of activity in December, 1954, all departments closed ranks, fell solidly in line behind this decision, and the computer age at State Farm Mutual was about to begin. With this crucial decision behind us, a series of additional meetings were held and decisions reached before January 1, 1955, including the following:

1. A new group was formed to implement the new electronic computer age at State Farm and was named initially as the Electronics Research Unit.

2. Four individuals from the Automobile Company and two from the Life Company were to be appointed to this Unit. The Fire Company did not join this effort at that time.

3. The four members selected for this new Electronics Research Unit from the Auto Company were:
   James Hickey—selected by Auto General Accounting
   John Janes—selected by Auto Statistical Dept.
   Roger Woodrey—selected by Planning & Research.
   Myron Willke—named "Superintendent-Methods Development" to supervise the Unit.

4. The two members initially selected to join this Unit from the Life Company were:
   Henry "Hank" Allen
   Frank Warber

5. The Auto Company agreed that each of the three most interested departments, i.e. Planning & Research, General Accounting, and Statistical Departments, would select an individual for this unit and that I would be its supervisor. The Accounting and Statistical Departments selected Hickey and Janes because of their expertise with the previous CPC and 602A calculators. Planning and Research selected Woodrey based on my remarks to Marquardt that Woodrey's work ethic and intelligence had impressed me (and others) greatly which I had observed as I worked on the 602A experiments and while Woodrey was doing his everyday chores on the Accounting Department tabulators. Woodrey's reputation for, hard work and effective work habits certainly impressed Marquardt.
6. I do not know how Allen and Warber were selected by the Life Company. However, before the Unit was assembled, the Life Company decided to initiate its own program, hence, Allen and Warber never joined this Unit. The Fire Company, at that time was not ready to invest in the manpower and other capital investments necessary for this joint effort. It would have been interesting to see what type of systems would have emerged from a joint effort by the three companies, which never did occur.
7. President Morris Fuller and other Life Company executives decided it was in the best interests of the Life Company to pursue its own data processing effort because they felt the system selected, the 650 system,[30] was not capable of handling some of the Life Company programs needed for such problems as the long term reserving of funds, certain aspects of the Maturity Table calculations, and others. Both Allen and Warber did initiate the Life Company data processing effort; and, over the years Frank Warber became Vice President-Electronics Research whereas Henry Allen became Senior Electronics Systems Analyst before his resignation in June 1967. Allen went to the Boeing Corporation, Seattle, Washington from which he retired recently and is currently living in Richland, Washington.
8. Since the Life Company decision to develop its own data processing unit was not known to the Auto Company until after January 3, 1955, it was necessary to locate an available room for six desks initially and for some growth during the next year or two. Fourth floor north which had only recently been used as a Lounge for all Home Office employees and which had been furnished with quite comfortable overstuffed furniture, was cleared of all the lounge furniture and equipped for use by the Electronics Research Unit.

As we were about to enter the new computer age in State Farm on December 31, 1954, the status of the work processing and record keeping, especially as it applied to IBM and IBM machines, was as follows:

1. IBM was undisputed leader of the computing industry having surpassed Sperry Rand, National Cash Register Co., Burroughs Corporation, and many others.

2. All IBM Accounting Machines were under the supervision and control of the Home Office and Branch Office Accounting Departments.

3. At this time, all Accounting Machines used by the company were card-oriented and all of them were rented from IBM—none at that time were purchased.

4. The basic types of IBM card machines in use as of December 31, 1954 in addition to the IBM 604 Computer were: (CPM means cards per minute.)

Type	Name
024	Non-alphabetic Key Punch
026	Alphabetic Punch Card Verifier
416	150 CPM-Numeric Tabulator
405	75 CPM-Alphabetic Tabulator
407	150 CPM-Alphabetic Tabulator
077	Collator
082	650 CPM-Sorter

There were some other punch card units in use but these were the principal units, which within 10 years were to be phased out for most machine accounting uses because by 1965 magnetic tapes and random access disks would begin to make punch cards and punch card devices obsolete.

5. Wendell Clithero was Branch Manager for IBM in Peoria and Jack Clatfelter was the IBM salesman responsible for the State Farm account. At that time, the IBM salesman for the State Farm Account working out of Peoria usually used space rented by the Customer Engineers as his IBM headquarters while in Bloomington. With the heavy involvement in computers which State Farm was about to undertake, this entire IBM environment would change as the computer era unfolded.

6. The first IBM calculators to be installed in the Home Office and Branch Offices which were to use the programs designed and programmed by the Electronic Research Unit were the IBM 604 systems. (The 602A had been only experimental.) These were followed within about one year by the IBM 650 which rented for $3,750 per month for the 2000 word machine initially used by State Farm. Subsequently, the 650 Systems were converted to 4000 word computers.

   It is important to note that the 604 used by the Electronic Research Unit for testing the "604 Program" and later the 650 for testing the "650 Program" were under and remained under the control of the General Accounting Department until the Home Office Data Processing Department under Arthur Dierkes was established in 1960.

Although we have documented the costs and decision-making process followed to secure the most appropriate and best equipment for use in that new data processing adventure, and have identified those individuals selected to inaugurate the Electronic Research Unit, nevertheless, we would be remiss if we did not mention the many other employees on the Planning & Research staff who were needed to perform important tasks not "directly" related to this new computer technology but which were important in this "new computer environment". According to microfilm records maintained by the Personnel Records Department, the following employees were included on the Planning & Research roster as of December, 1954:

Name	Title
C. A. Marquardt	Vice President-Planning & Research
Bess Dragoo	Secretary
Clayton Sturgeon	Assistant Director-Planning & Research
Oleta Berksaker	Stenographer
Emma Brethorst	Junior Methods & Procedures
Robert Campbell	" " " Analyst
Hazel Dalton[1]	" " " Analyst
Arthur Dornaus	" " " Analyst
Paul Elvidge	" " " Analyst
Elmo Gentes	" " " Analyst
Daniel Gross	Methods & Procedures Specialist
Reuben Hershey	" " "
Mildred Hindenberg	Stenographer
Marguerite Kadgihn	General Clerk
Eugene Osman	Methods & Procedures Specialist
Shirley Steele	Clerk Typist
Myron Willke[2]	Superintendent-Methods Development

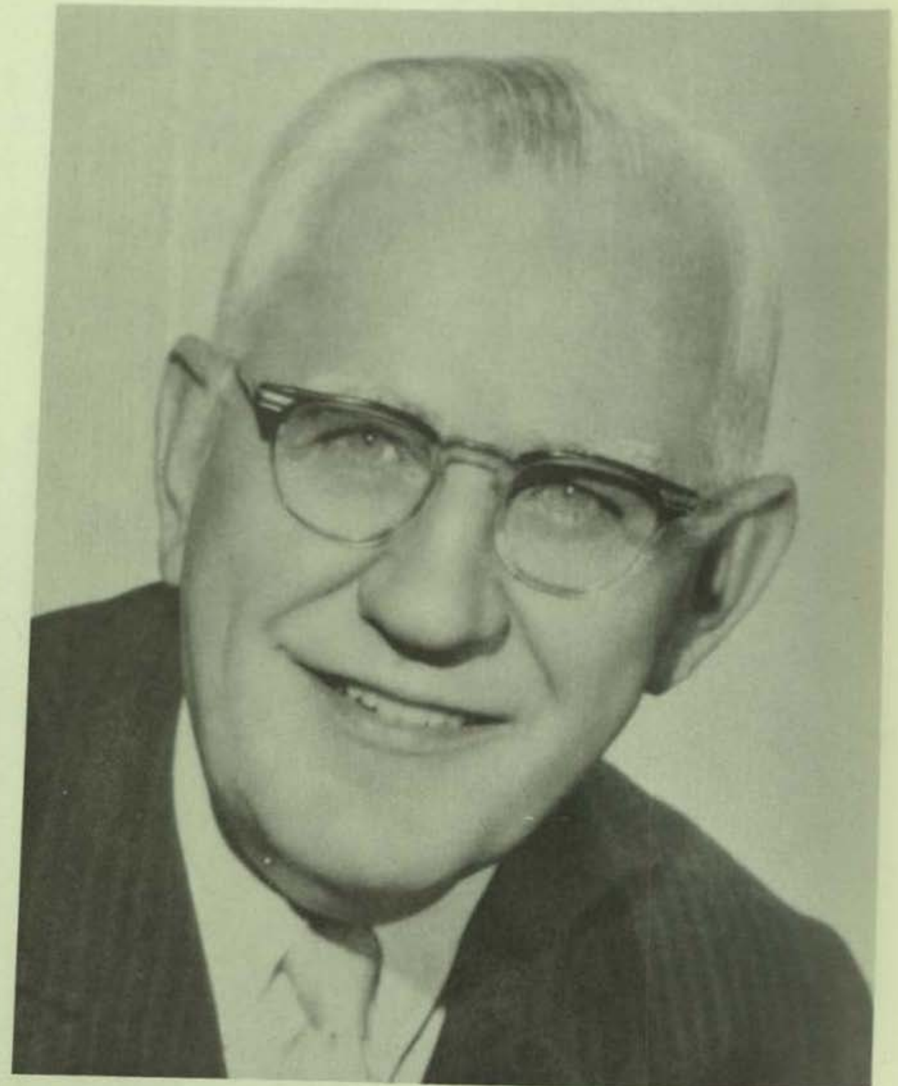
[1] Hazel Dalton became long-time secretary to Clayton Sturgeon

[2] Roger Woodrey, John Janes and James Hickey did not become members officially of the Electronics Research Unit, Planning & Research Department, until after January 1, 1955. (Later the Electronics Research Unit was renamed the Systems Development Unit and ultimately the EDP Research Division.)

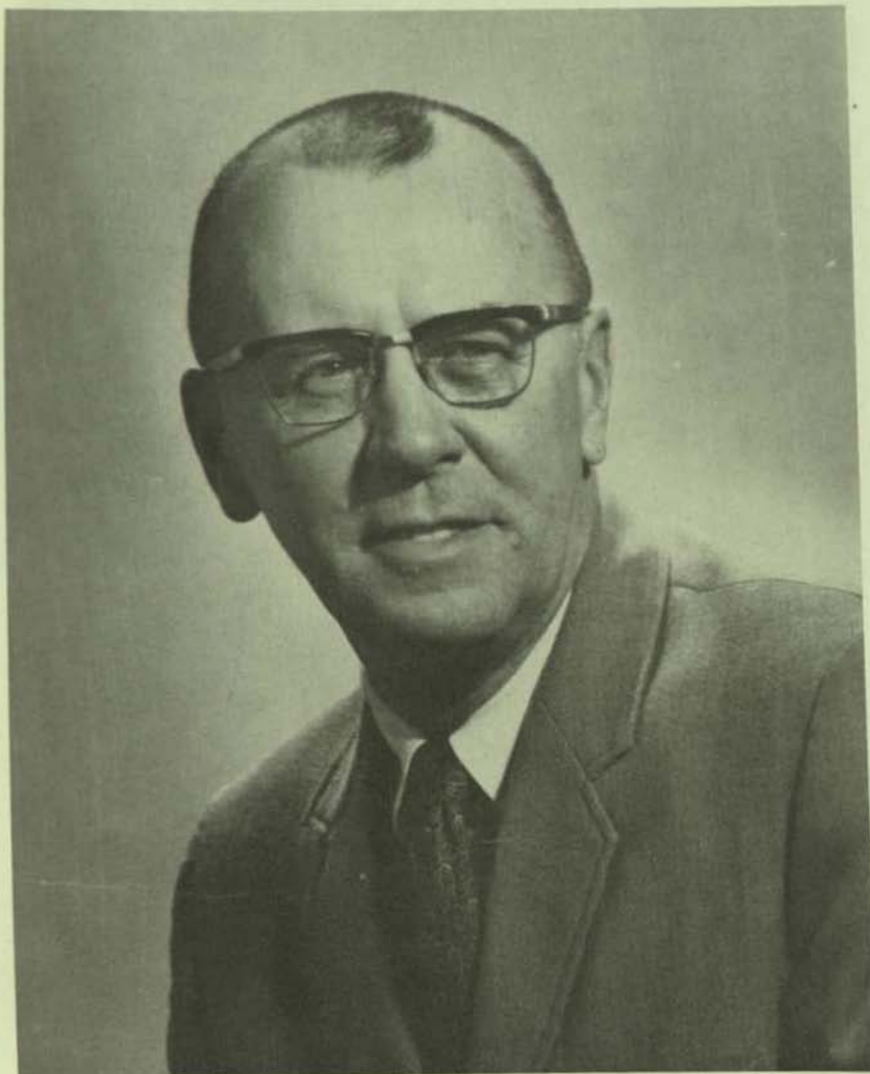
Finally, the stage was set for four men, confident but inexperienced, assured yet nervous, and overworked but eager, to inaugurate Computer Era I at State Farm.

G. J. Mecherle, Founder, President & Chairman of the Board — State Farm Mutual Insurance Company.

Ramond P. Mecherle, Second President — State Farm Mutual Insurance Company.



Gil B. Brown, First Comptroller — State Farm Mutual.



Carl Marquardt, Vice President — Service & Systems.

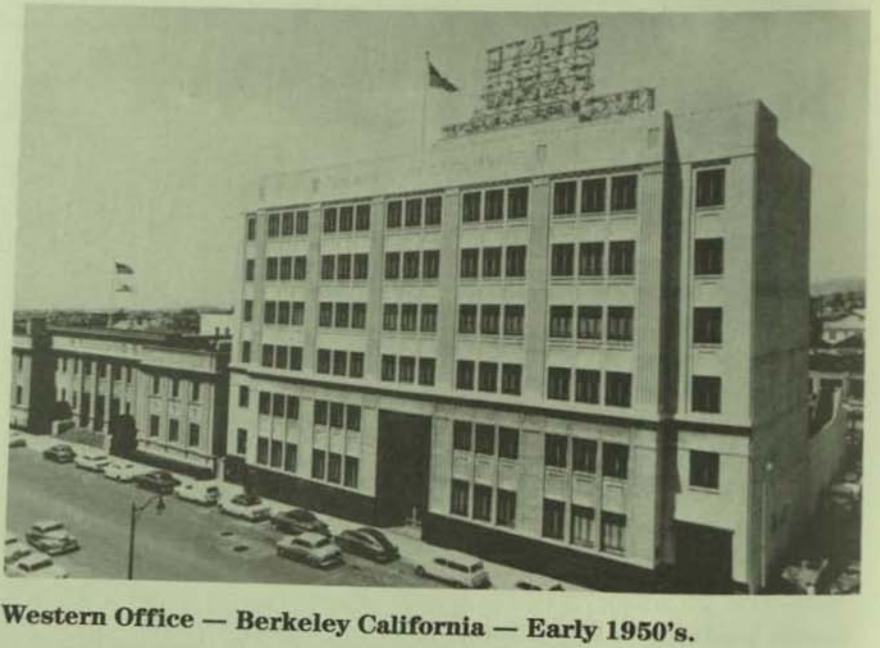
(Right) Original H.O. Building with only south eight floors — 1933.

(Left) Old Home Office — Completed in 1946 — Currently Fire Building.

Durley Building — Early State Farm Home Office — 1922 & 1925.

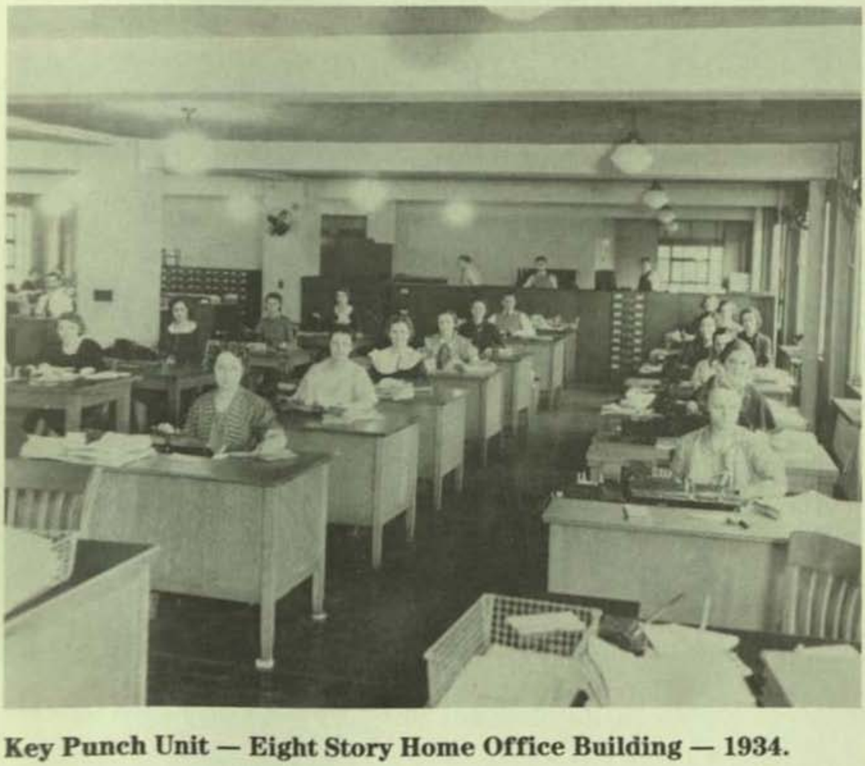
Arnold Building — Early State Farm Home Office — Later McLean County Farm Bureau Building — Home Office Building in 1922.

Old Fellows Building — Early State Farm Home Office — 1925.



Western Office — Berkeley California — Early 1950's.

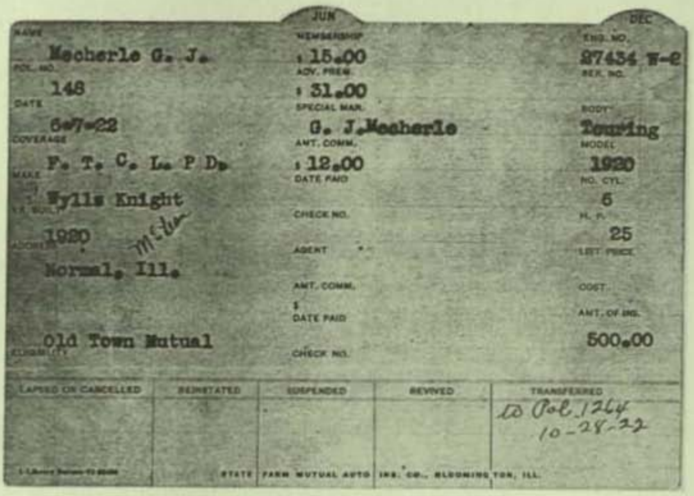
Machine Room — 2nd floor — Home Office with Carl Wettersten and Herman Salch — 1930.



Key Punch Unit — Eight Story Home Office Building — 1934.

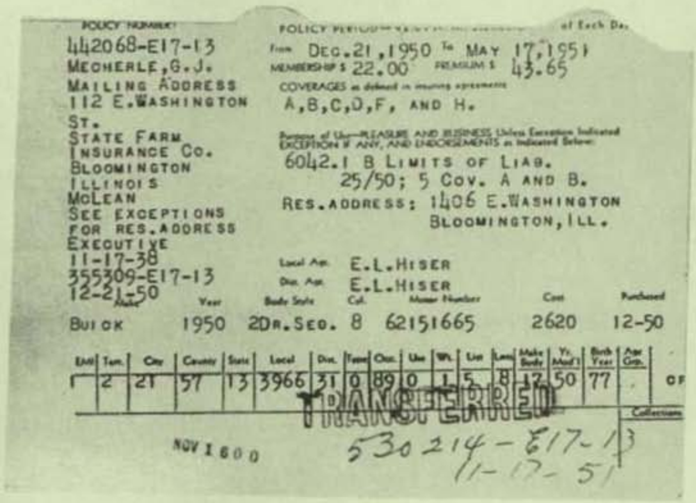
(Above) Anna Mae Winterland — Early Billing Machine — 1945.

(Right) Machine Room with Electric Accounting Machine Equipment — 1941.



JUN DEC
NAME Mecherle G. J.
POL. NO. 148
DATE 6-7-22
COVERAGE F. T. C. L. P D.
MAKE Wylls Knight
1920 McLn
Normal, Ill.
Old Town Mutual
MEMBERSHIP $ 15.00
ADV. PREM. $ 31.00
SPECIAL MAN. G. J. Mecherle
AMT. COMM. $ 12.00
DATE PAID
CHECK NO.
AGENT
AMT. COMM.
$
DATE PAID
CHECK NO.
ENG. NO. 27434 W-2
SER. NO.
BODY Touring
MODEL 1920
NO. CYL. 6
H. P. 25
LIST PRICE
COST
AMT. OF INS. 500.00
LAPSED OR CANCELLED | REINSTATED | SUSPENDED | REVIVED | TRANSFERRED
to Pol 1264 10-28-22
STATE FARM MUTUAL AUTO INS. CO., BLOOMINGTON, ILL.

George Mecherle X-Card — 1922.



POLICY NUMBER
442068-E17-13
MECHERLE, G.J.
MAILING ADDRESS
112 E. WASHINGTON ST.
STATE FARM INSURANCE CO.
BLOOMINGTON
ILLINOIS
McLEAN
SEE EXCEPTIONS FOR RES. ADDRESS
EXECUTIVE
11-17-38
355309-E17-13
12-21-50
POLICY PERIOD ... of Each Day
From DEC. 21, 1950 To MAY 17, 1951
MEMBERSHIP $ 22.00 PREMIUM $ 43.65
COVERAGES as defined in insuring agreements
A, B, C, D, F, AND H.
Purpose of Use—PLEASURE AND BUSINESS Unless Exception Indicated
EXCEPTION IF ANY, AND ENDORSEMENTS as Indicated Below:
6042.1 B LIMITS OF LIAB.
25/50; 5 COV. A AND B.
RES. ADDRESS: 1406 E. WASHINGTON
BLOOMINGTON, ILL.
Local Agt. E.L.HISER
Dist. Agt. E.L.HISER
Make BUICK Year 1950 Body Style 2DR.SED. Cyl. 8 Motor Number 62151665 Cost 2620 Purchased 12-50
TRANSFERRED
NOV 1 6 0 0
530214-E17-13
11-17-51

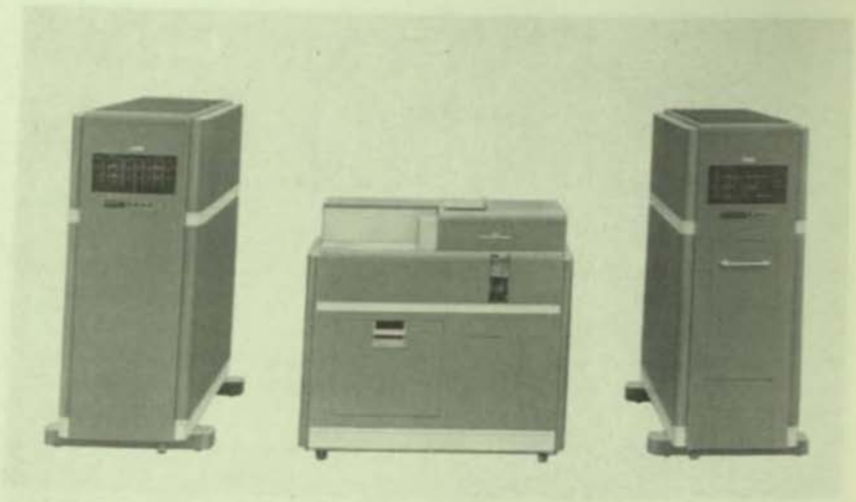
George Mecherle X-Card — 1950.

(Above) Lillian Strange sewing application files in Southeastern Office — 1957.

(Right) Basement x-card racks & files — 1941.

(Above) IBM Printing Card Key Punch — 1949.

(Right) Betty Madden on skates delivering mail — 1945.



IBM 604 Electronic Calculator — 1954.

Old and New Muzak Systems — 1954.

CHAPTER III

Electronic Marvels

Computer Era I — *"Getting Started"*
(1955-1961)

The fateful day that we had been preparing for had finally arrived—the day that we were going to begin the computer age. The day was January, 3, 1955 but alas the great expectations ended in disappointment as we had learned that this was not to be a multi-company venture but that the Life Company was going to establish its own system and data processing unit. We surmised this intention late in 1954 but it did not really "sink in" until we found that there were going to be six desks with only four of them filled in the large room set aside for our unit. This room had been the company lounge, fourth floor-north, immediately north of the freight elevators in the center of the old Home Office Building.

This development and its impact has been completely obliterated over time but in 1955 it impacted the Auto Company severely enough that this important event was delayed, according to my diary, until one week later, Monday January, 10, 1955 when the four Auto members of this venture and management had sufficiently recovered to begin the computer age officially.

The four members—Chapter II described how they were selected—were Roger Woodrey, John Janes, James Hickey and myself. We had spent some of the first week in January getting oriented to our new location which had been emptied of the lounge furniture specifically for our exclusive use except for a desk in the southeast corner for Robert Bischoff, then Research Assistant to Thomas Morrill, Vice President. Bischoff, long time Regional Vice President, Mountain States Office, is now on special assignment in Greeley, Colorado as Vice President and Assistant to Chief Executive Officer.

Historic Room—Home Office Fourth Floor-North

Although this room had been the company lounge for a number of years, when it was established in the early 1940's, there were two lounges: separate lounges for men and women. This location at that time was the ladies' lounge. Today, this large room still exists and is used by the Fire Company Data Processing Department. This room is truly historic in the sense that it was here that the Data Processing Department for the Automobile Company was "born" and it is not only coincidental but quite symbolic that currently it is again being used for data processing purposes.

The four of us spent much of the first week of January completing or advancing our previous assignments. Since I was thoroughly involved in "refining" the procedures for implementation of the 604 Program, recently approved by top management, I spent much of my week finishing General Procedure Memo #170 which was to introduce the first computer system, the 604 Program, countrywide. Roger Woodrey, John Janes, and James Hickey having recently transferred from the Accounting and Statistical Departments, also closed out their unfinished business in their former departments in preparation for the new assignment on January 10th.

Nevertheless, I shall never forget the rather "lost" feeling on the morning of January 10 as we gathered to discuss our first serious moves towards building a computer system for State Farm Mutual Automobile Co. The really sobering thought was that no one in top management or C. A. Marquardt could help us except to give us the straight directive: Implement the 604 Program as formulated in General Procedure Manual Memo #170 to be followed by a truly Electronic Computer System using the IBM 650 System and to have this system ready for implementation by December 31, 1955. Although we were quite confident of our ability to accomplish this directive in the time allotted, nevertheless, we deeply felt the pressures that naturally accompanied this truly pioneering venture.

It is absolutely not my intention to over-dramatize the scene and feelings of the four of us on January 10th, but picture yourself arriving in a large room whose only windows faced the dreary brick walls of store buildings across an alley way, with six empty desks and virtually the entire company looking over your shoulder, knowing that you were commissioned" to do "great things" with this marvelous invention, the electronic computer, when no one anywhere in the automobile insurance industry had done what you were now expected to do in one year for the world's largest automobile insurance company. The four of us had never experienced that type of challenge before and only the future implementation of the 1400 System (see Chapter IV) in 1962 would exceed it from the standpoint of pressure and tension.

Furthermore, the weather did not help as it was a dull,[26] moderate winter day, and the next day, January 11th was worse as it turned into a nasty, rainy winter day heading into an even colder period. That was the setting on January 10th as we started the most important venture of our collective lives!

Not only was the weather nasty during that early period, but so was the international political climate as the USA was embroiled in the "cold war" with Russia as a result of the policy of "containment" fabricated by then Secretary of State John Foster Dulles. Many individuals in America (including my wife and I) were thinking about storing food stocks, water and the bare necessities of life in a nuclear-safe basement or a specially constructed bomb shelter in the event of a nuclear war. A few across the country did build such shelters. Luckily, those preparations were never needed.

At that same time, almost paradoxically, America was going through a "Back to God" movement which was quite strong. According to a national survey, 59% of all Americans were church members; however, only 35% admitted to attending church regularly. (That has not changed much, has it?) In general, the latter half of the decade of the 1950's was rather calm economically and domestically, reflecting the rather placid "Eisenhower years" with the exception of Eisenhower's illness as explained in Chapter II. That calm atmosphere was basically true also of State Farm during that period.

Perhaps of greatest interest to readers familiar with the local State Farm scene, we find that the company had weathered the problems following two wars, World War II and Korean, quite successfully. Much of the credit for that success must be attributed to Adlai H. Rust as Executive Vice President and later as president, and Edward B. Rust, Sr. as Executive Vice President-Operations. (As stated earlier, Adlai H. Rust was elected president after the death of President Ramond Mecherle on May 15, 1954.)

In Bloomington, the Automobile Company had been able to return most, if not all, of its home office employees back to the Home Office Building, having moved out of the Consistory, the Bunn Building, etc. and having established the tenth branch office with the eleventh scheduled for occupancy during 1955. Those eleven branch offices, the year each office was opened, and the Branch Office Auditors, responsible for operating the first branch office computers, were:

Branch Office	Year Opened	Branch Auditor[32]
Western..........	1928	Robert Francis
Canada...........	1938	Jack Littleford
North Central......	1947	Ivan Daley
West Central......	1947	Al Brand
Michigan..........	1950	Charles Stauffer
Southwestern......	1951	Darrel Lee
Eastern...........	1952	Frank Roeske
South Central......	1953	Jim Merrick
Southeastern......	1954	Rodney Robbins
Southern.........	1954	Herbert Litwiler
Southern Calif......	1955	Robert Bruce

At this time, the Illinois Office did not exist and therefore all accounting and statistical work was done on machines located on the second and third floors of the Home Office. Bill Marriner was the first individual responsible for the supervision of these new computers performing work exclusively for the program testing by Planning & Research and work for the operating divisions located in the Home Office. Marriner later became the first Branch Auditor of the Illinois Office.

Veteran's Parkway Scene in 1955

As mentioned earlier, all Auto Company Home Office employees were located in the current Fire Building in downtown Bloomington. The land which today, in 1991,[33] is occupied by the Corporate Headquarters and the surrounding land on both sides of Veteran's Parkway was, in 1955, open farm land. East of Veteran's Parkway, then U.S. Route 66, a few homes had been built in a new housing development along Oakland Avenue east of Hershey Road. Among whose early occupants were two prominent State Farm'ers, Robert Noel, State Farm executive, and Frank Figg, a leading State Farm agent in the Bloomington Area.

The only other significant developments in that area included a small housing development on Illinois Route #9 across from the current Farm Bureau Field,[33] and the Brandtville and Streid's Restaurants located at the crossroads of U.S. Route 150 and U.S. Route 66. Gasoline stations were located on Oakland Avenue where Hardees restaurant is currently located and on the northwest corner of the crossroads of U. S. 66 and Illinois Route 9. Nearly all other land in this eastern edge of Bloomington was being farmed. This changed drastically within the next decade as State Farm's Illinois Office, the Eastland Shopping Center, and other businesses moved eastward. That was the general setting locally and worldwide as we began the computer age on January 10, 1955.

So back to the beginning of Data Processing at State Farm! How did we get started?[26] Well, we were immediately confronted with two fundamental requirements:

1. We had to learn the ins and outs of the computers we were going to program, the IBM 604 & 650 systems.

2. We had to decide on and then outline the basic fundamentals, "block diagram" the details, and formulate the extent and boundaries of the entire insurance problem that we felt we could logically program, test, document, and install in one year.

All four of us were in varying degrees quite knowledgeable about the 604 and we had been exposed to the basic elements of the 650 system; but, we were in the big leagues now, so our first goal was to learn the art of advanced 650 programming through an advanced programming school which IBM had arranged for us later on the first day, January, 10th in the empty space of the same room, fourth floor-north.

The four of us spent the entire week in this school which ended at noon, Friday January 14, with the first IBM "perk" we had ever received which was a noon luncheon at a local hotel as guests of IBM.[26] This was of course the beginning of a very important relationship for IBM also and they were not about to let that opportunity pass unnoticed. We had actually completed our first week. What a relief that first week-end!

The second week shocked us into realizing that the four of us were not going to do this job alone. We realized that two major endeavors going on simultaneously, implementing the 604 Program, and designing and installing the 650 Program were more than we could handle. We fell back on a well-worn scheme of convincing Carl Marquardt that we really" could do this job but we would need to "borrow" some help—even though it was only the second week! On January 20th, we "borrowed" Elmo Gentes and Robert Campbell, son of Ted Campbell, Vice President, Fire Company, to help design and print some of the remaining flows of work needed the next day when we provided the first briefing of the 604 Program to the Metro-Illinois and Indiana Divisions located in the Home Office. Remember these were not the very first divisions on the 604 Program since Iowa was placed on the program on an experimental basis in 1953 and the first production from Iowa was released to the Accounting Department on April 7, 1954.

Iowa First Division Officially on any Computer Program

When top management later approved the 604 Program, Iowa became the first division to be operating officially under any type of computerized insurance operations at State Farm. Woodrey, Janes, and Hickey delved head-long into the task of plotting and outlining the work through the Accounting and Statistical Departments while I concentrated on refining General Procedure Memo #170 to introduce the program to the remaining Home Office divisions and the first Branch Office divisions.

We moved quickly to install the 604 Program in the Metro-Illinois and Indiana Divisions located in the Home Office, now the Fire Building. On January 21, just eleven days after starting the Unit, we began briefing service section employees of the two divisions on the intricacies of the program. These briefings included meetings with rate clerks, key punch and verifier operators, bookkeepers, general correspondents, cancellation clerk typists, underwriting correspondence clerks, service unit supervisors, service superintendents, underwriting superintendents,[34] and divisional managers. Separate sessions were held with policy typists and checkers, collection clerk typists, and record control clerks. It can be readily recognized that even this very low key beginning of computerized processing from an almost totally manual system brought wholesale changes to the operating divisions and only a taste of the enormous changes that were to take place in the company from a record keeping viewpoint, particularly during the next two decades. By the end of February, we had briefed and installed the program in the Illinois, Indiana, Wisconsin, and Missouri Divisions and began preparation for the first branch office divisions in the North Central and West Central Offices.

Events were moving very fast and by March 6th, the Tabulating Supervisors, Duane Anderson and Leon Overbeck, from the North Central and West Central Offices arrived for a week-long briefing of the 604 Program. These two branch offices became the "guinea pigs" for the extensive task of installing the system in all eleven Branch Offices existing at that time.

The basic elements of these briefings were directed at the intricacies of operating the 604 calculators, the basic concepts of the wiring of the "boards", explanation of possible problems and how they might be solved, and of course work flows within as well[25] as to and from the operating divisions for which the work was being done. This program benefited primarily the Rating and Bookkeeping Units of the Operating Divisions. It released the employees for more interesting and satisfying work than merely adding and balancing work sheets and x-cards, which was the basic work replaced by this program.

On March 19, 1955 we boarded a train for Lincoln, Nebraska to implement the first computer program ever installed in one of our branch offices, the West Central Office. We borrowed Arthur Dornaus to assist our unit in the briefing of the operating divisions, which required two days, while the actual testing and implementation of this entire program required five days. The 604 Program was now successfully operational in some of the Home Office divisions and one branch office.

Meanwhile, the entire unit began working on the outline and programming of the 650 System which was to replace the 604 Program on January 1, 1956. This required the adeptness of juggling two different systems simultaneously, installing 604 systems while building the 650 Program. This required additional manpower. Elmo Gentes, although a borrowed member of our Unit, assisted us with some of the 604 briefings and ultimately became a permanent member of the Electronics Research Unit.

It is not my purpose to recite the day by day "trials and tribulations" of this early computer age but to give you the real flavor of this early period when basically four pioneers augmented by some very important assists from many others got the computer age into "low gear".

By the time the work of installing the first computer system was in "overdrive", many more hours, day and night, had been spent programming the 604 and 650 Programs. Briefing operating divisions countrywide involved many hours of travel by train, with the final installation of the 604 system in the Southern Office, Birmingham, Alabama on June 9, 1955.

The Electronics Research Unit was now able to concentrate mainly on its primary mission of installing the first truly "electronic computers" for State Farm, the 650 systems. We also learned that installation of a computer system, the 604, did not free the Unit from further attention to that program. We learned for the first time that program problems and maintenance could devastate our personnel resources. We also learned the horrible truth that such problems NEVER "completely" fade away. The bottom line was that in addition to designing the 650 Program, we had to continue working with these "annoyances", although quite minor, until that system was replaced by the 650 system, when we found out what REAL problems were!

Strangely, even though we had only recently completed the installation of the last 604 system in our Southern Office in Birmingham, Alabama, word had already reached nearby Louisiana State University about the pioneering we were doing with computers in the field of insurance. The result was the first invitation, during the summer of 1955, to speak before a large special gathering of students about our pioneering efforts in computerized insurance processing. Marquardt and I drove to LSU, were treated to great hospitality, including chicory in our coffee, and presented our first ever explanation of our computer research as it was being pioneered at State Farm Mutual. We had no idea that this was only the beginning of innumerable sessions such as this that would follow in the future.

We were in mid-1955, the 604 Program had been installed, but we were facing the year-end deadline for completion of the 650 Program. At this same time, one of the notable events of that summer was the publication of the book "The Farmer From Merna" which was a very well written biography by Karl Schriftgiesser, published by Random House, of State Farm's founder, George J. Mecherle. This book was not only an interesting chronology of the "Chief's" life but documented much of the history of State Farm during his lifetime. I have drawn considerable information for this book from that historical masterpiece. Another historical event involving State Farm that summer was the appearance of Ed Sullivan and members of "Toast of the Town" show from New York for the anniversary party on June 7th. Sullivan's show was one of the top network television shows at that time. State Farm'ers also enjoyed the success of the State Farm Chiefs that summer, then a national fast-pitch softball powerhouse. Later that fall, Car Life magazine announced that "State Farm is by far the best buy" among automobile insurers from the standpoint of "both cost and service".

As stated earlier, we were now in the big leagues of the computer world which meant that much more was needed than the design of a computer program by four technically inclined individuals. In addition to the design and programming of the 650, it meant the careful coordination of the various programs, all of which had a companywide impact, transforming our efforts into a comprehensive, extensive system. The 650 Program included "firsts" in such fields as computerized underwriting, and claims statistical programs. Additionally, programs were written for the statistics needed by the company's actuaries and management, policy rating and policy printing programs, and numerous accounting and management daily, monthly, and yearly summary reports. This was a fantastic undertaking to be completed in the last half of 1955, especially when some of these were pure pioneering projects such as attempting to underwrite applications on a computer, which had never been attempted before.

In addition, new manuals and memoranda had to be designed and introduced to serve as information and documentation of these programs. They also had to fill the informational needs of not only the operators of those new computers, but perhaps even more importantly for the operating division personnel, and general department employees. Those individuals had to work with the computer output and use that output effectively to run a huge insurance operation. Marquardt, in writing a "Case History" for a data processing conference to be held in New York City,[35] explaining the directive given our Unit, wrote:

> "'. . . It is expected that you will explore the opportunities to effect economies in our operations by adapting mechanical methods to operations that are not presently included in the company's punch card applications, as well as by improving or eliminating procedures now accomplished by punch cards. The interrelationships between the various functions should prove a fertile field for your consideration. Concern is not to be with machines alone, nor with replacing one form with another. A new and different system in which a machine is only a part or a tool is to be explored.
>
> "We want you to visualize and in time merge the scope of electronics as respects the overall system, not just one particular phase. Costs should not handicap thinking; however, costs must be kept in mind and weighed carefully. Your work is exploratory in nature and your authority includes the right to recommend but not the right to initiate unless authorized to do so. The general principle to be observed is that every associate of these companies is vitally interested in the economies and efficiencies which will result from your efforts, and to that end you are expected to interest yourselves in every phase of the company's work. You, in turn, may expect the fullest disclosure and consideration from every employee regardless of administrative assignment.

"As a final suggestion it would seem advantageous for you to keep a diary of your activities including all recommendations made.

"The initial objectives established for accomplishment in the automobile company were:

1. Selective Underwriting
2. Automatic Rating and Balancing
3. Premium Reserve Runs
4. Policy Report
5. State Book
6. Detailed Underwriting Experience
7. Internal Statistics
8. N.A.I.I. Reports
9. Payroll
10. Machine preparation of policies, refund drafts, and statements
11. Loss Accounting
12. Agency Records
13. Agency Compensation
14. Actuarial Problems"

That is a summary of the assignment that faced us in the summer of 1955. Without the outstanding assistance, cooperation, understanding, and information supplied by every division of the company affected by this new system, and the extraordinary effort of our small Unit, we could never have achieved our goal. It was a given that all of us needed to work night and day to accomplish it. In my own experience, my wife and I were building additional rooms onto our home doing much of the interior work ourselves. Many nights I had to choose between working on the Underwriting Program or on the house.

On June 30th, after the four permanent members of our Unit had spent much time on the design of the 650 system in addition to installing the 604 Program, we started the programming phase of the 650 Program with Woodrey delving into the rating and policy Issuance programs; John Janes worked with the statistical and other management programs; and James Hickey worked on the many accounting programs and reports. Again we were not going to accomplish this alone and we borrowed such capable men as Don Halsema, currently manager of the Home Office Data Center, and Donald Rynell, a former data processing technician and supervisor, now retired. Since their expertise was in the field of printing on IBM 416 and 407 tabulators, we utilized that ability. We began seriously to adjust our thinking to the effort of building our first comprehensive system using an IBM 650, the first electronic stored-program computer that we had ever encountered, though small by 1991 standards, and an enormously powerful machine when compared to the

IBM 604. By mid-year 1955, although much work had been done on the design of the 650 program, we found ourselves much in the position of the young man who discovered on his first date how pretty but costly his new girl friend could be. We liked what we had learned about the 650 computer but we had the dual dilemma of attempting to attain the more than a dozen goals outlined in Marquardt's speech discussed earlier, and the uncertainty as to whether we could make it cost effective when considering rental, programming, training, installation, and operational labor costs. All of this despite the fact that at that time we did not have a 650 computer on our premises and had never had any "hands on" experience. We established the date of August 15, 1955 for a trip to Endicott, New York where we were assigned a 650 test system for around-the-clock tests of our programs. As we began to complete various programs for this testing excursion to New York, our excitement and confidence began to soar. But before we discuss this test experience, let us take a deeper look at the 650 system and IBM's other computers which we had never seen, and IBM's ability to deliver the computer support upon which we were so dependent at that crucial time.

First Generation Electronic Computers

Previously, I have described IBM's initial venture into large scale computers including its first venture, the Mark I built for Harvard University. Univac's great success with the first truly electronic computer, Univac I, spurred IBM into getting serious about the possibility of losing its position as the leading manufacturer of business machines—especially in this new field of computers. The result was the introduction of the powerful IBM 701 in 1952 of which only 19 were built. This computer, however, was directed at the scientific market and was soon superseded by the IBM 704. In this year of 1955, IBM countered with its first large scale business oriented computer directed specifically at the Univac market. This was the IBM 705, successor to the 702. (The scientific market required enormous computing power and relatively small storage for data; whereas, the commercial market inversely required less computing power but a much larger storage area for data.)

The 702 had been directed primarily at the substantial government market of that era. The IBM 705 was much improved technically and functionally—especially for commercial users. The foremost improvement of both the 704 and 705 over the 701 and 702 was the use of Ferrite-Core memory instead of the Cathode Ray tubes used for memory in the 701 and 702. Those two systems were IBM's thrust at the very bold and very large customers willing to put enormous capital into a relatively risky and unknown venture dealing with investment payback. Estimates abounded everywhere but not enough experience had been garnered to know if these huge computers really would "pay off". Most of them had been used by the U.S. Government and that experience certainly did not prove profitability for the commercial customers in those pioneering years.[2]

In that environment, what were small companies and even large companies such as State Farm, going to use if they were not willing to jump into the "large pond" of capital expenditure? While large-scale machine development work was capturing the attention of many top level IBM executives in 1951 and 1952,[31] Tom Watson, Jr. breathed life into the faltering Magnetic Drum Calculator project (the 650) at the Endicott, New York, laboratory which had been nearly dormant. Watson saw a market for mid-sized computers despite the frenzy to catch Univac.

Tom Watson, Jr's intuitive nature resulted in a very unexpected bonanza when he insisted on the completion of the design and initial manufacture of the 650 by mid-1953. With the magnetic drum for its memory, it was acknowledged as much slower but most important, a much cheaper electronic computer which was especially attractive to many companies, large and small, which were entering the new and unknown computer age for the first time. Yet this system had all the ingredients needed to meet the test of an electronic computer: Electronic memory, stored programs, error checking circuitry plus the additional peripheries which included the random access mass storage of the IBM Ramac 305 and magnetic tape drives. The IBM Ramac 305 was an IBM patented technique which was designed around the concept of multiple magnetized disks twirling on a vertical spindle at a speed considered phenomenal at that time. Tape drives were, of course, already widely used, especially on the large systems such as Univac I and the IBM large systems.

To meet the mid-1953 target date for the 650's,[39] IBM engineers had to work around problems caused by their inability to use certain components and concepts previously patented by Drs. Eckert and Mauchly. These patents did not enjoin use of the magnetic drum, which was the distinguishing concept of the 650.

Attributes of IBM 650 System

So what was this 650 like on which we were going to test our programs in Endicott, New York? Although I have given you IBM's description of this system earlier, from our perspective it had these attributes:

1. It was an easily programmed machine.

2. The console for controlling the computer was easy to learn and use.

3. It would be strictly IBM card-oriented input and output with which we were familiar. (IBM later added magnetic tape units, random access devices, and the 407 accounting machine, all attachable as "on line" enhancements. This was made possible in 1954 via a

feature that permitted alphanumeric information to be read, punched and eventually converted magnetically for the tape drives and random access device, the 305 Ramac.) State Farm never utilized the alphanumeric capability on its 650's leaving that for the next generation of computers, the 1400 system. State Farm never used the IBM 650 except as a card-oriented system.

4. Checking facilities were excellent meaning any errors were nearly always our own.

5. It had an excellent program monitoring system whereby we could "half cycle" each program step—step by step—which made testing by novices, like us, relatively easy—especially since this was our first stored-programming experience. (Stored programs simply meant that computer program instructions could be entered via punch cards and would remain stored magnetically on the drum until they were changed or erased.)

6. All programs were designed to fit "words" of ten numerical positions making it a very easy programming language to learn—an almost machine-like language coding scheme. (We did learn later through experience that being a machine-like or non-symbolic language, it was also a very slow and difficult language by which to make subsequent program changes.) By "machine-like" it meant we had to assign precise numbers to each program statement and storage location. By contrast when using a symbolic language, the computer assigns a precise number to each symbolic code provided by the programmer. Although symbolic programming via alphanumeric characters was available, State Farm programmed its 650's only in numeric code.

7. For the first time, programs could be written on programming forms on the programmer's desk and entered in the system via punch cards.

8. Computer speed could be increased via a difficult technique called "program optimization" which simply meant the computer production could be enhanced by the proper relative positioning of each instruction to the immediate succeeding instruction when carefully considering the drum rotation speed of 12,500 revolutions per minute. (More technical than this I shall not become!) We ignored this attribute for the first six months because our first concern was program accuracy and to make each program operational as quickly as possible.

9. Finally, although a relatively heavy machine, it was also a relatively small machine for that era with only three components: The Central Processing Unit, a Read-Punch Unit for reading and punching input-output IBM cards, and a separate Power Unit. (Its

weight was so concentrated that heavy planks had to be placed under the wheels of the Central Processor and Power Units to prevent them from breaking through the floor.)

Initial 650 Program Tests—Endicott, New York

That was the system we were going to test in New York. Making this first test trip were the four original members of our Unit, Roger Woodrey, John Janes, James Hickey, and myself. Robert King, then IBM sales representative for State Farm account, also accompanied us. Each of the four members of our team had written one or more of the seven major programs which would perform the initial basic jobs for the system we were to implement by year-end. We traveled by train to Endicott by way of New York City, arriving at noon, August 15th.

IBM made one of its 650's available to us by 3 PM that same day and provided us with the assistance of a technician who gave us hands-on training necessary for such a new experience after the customary introductions and niceties had been resolved. After the first night, we realized that the three day period on this system allotted to us would not get the job done, so we divided out tests into periods for each of us to be on the system and as a result we spent all of three days and nights working nearly twenty-hour days—often arising at 4 AM and working until 10 PM or midnight—testing our programs. Obviously, we received very little sleep.

We never did get all programs working perfectly but good enough for us to know what concepts we had interpreted correctly and which ones we had to review and rewrite. We had accomplished our purpose of getting first hand trial and error experience and an assurance that we were on the proper system design path.

On August 18th, we were scheduled to leave Endicott by train around midnight only to find after waiting for about two hours there would be no train. The tracks had been washed out by hurricane "Diane" forcing us at 2:30 AM to schedule seats on a two engine, propeller driven Convair, which was to depart around 7 AM that morning. Hurricane Diane was so severe that it devastated the east coast from South Carolina to New England. It was the worst hurricane ever to reach New England killing 184 persons and dumping 15 inches of rain onto the New England countryside.[149]

Not only did we get very little sleep, we were to fly in the midst of that hurricane, hedge-hopping over the Catskill mountains, low enough to stay under the churning clouds but high enough to clear the mountains as we headed for Pittsburgh and on to Chicago. It was my very first commercial flight but all of us shall always remember it! Appropriately, my colleagues thought I had a "screw loose" since I was enjoying the flight, being a novice flier and not really knowing what to expect, while many others were experiencing severe cases of air sickness. To use a common vernacular, "they were green at the gills and I was simply naive."

Carl Marquardt's Miraculous Escape

Upon our return to Bloomington after our harrowing experience, Marquardt, after many years of keeping a miraculous experience of his own "close to the vest", relayed his own much more unnerving experience which happened to him many years earlier.

Some time during the early 1940's, when Marquardt was Underwriting Manager in the Minnesota Division, he was scheduled to make an airplane trip from Chicago to Fargo, North Dakota for an agents' meeting. It was during a very heavy snow storm which had blanketed the midwest including Chicago and Fargo. Because of the storm, Marquardt missed his scheduled plane and took the next available flight which required some re-routing. Upon his arrival in Fargo, when he registered in his hotel with the name "Marquardt", the hotel clerk "turned white as a sheet" asking, "Are you Carl Marquardt of Bloomington, Illinois?" Upon his answer, the clerk said, "You are supposed to be dead! Your name is on the list of people who perished on your flight as it crashed in the snow storm!"

Needless to say, that affected Carl for many years when he would travel only by train—although the reason why was not generally known in the department and not by the four of us until we relayed our Endicott experience to him. Marquardt was inclined to be quite stoic about such events. It was not until the late 1950's or early 1960's that he resumed airplane flights.

Back in Bloomington, we now had to finalize the many tasks remaining in preparation for the installation of the first 650, the first stored-program computer ever installed by State Farm. Preparations for this included testing the 407 Tabulator boards at the Chicago IBM Test Center, the writing of computer and operational instructions for operating divisional personnel, and the completion of program changes resulting from the Endicott tests.

New Electronic Marvel At State Farm

On September 16, 1955 at 4:30 PM. the first 650 system arrived in the Home Office Building in downtown Bloomington. There obviously was great fanfare about this event—so much so that we did not really know how to handle it! The ALFI published on September 23 blazoned the headline, "Introducing the New Electronic Marvel-'650'; (But it's Really a 'Big Dummy', Without People)." That headline really showed our Achilles heal i.e. the uncertainty of the reaction from the average employee: Would this "new fangled" computer be accepted or create a general fear about losing jobs! That was a potent question at the time because it was not entirely out of reason for possible unionization of our work force if that perception ran amuck. That was one of the important issues facing us on that historic day.

To follow up on the theme that this "thing" was not a threat but a device which would help everyone service policyholders more efficiently, the ALFI went on to say:

> ". . . we're still in control. No master mind from outer space or fugitive from a monster factory, the new 'employee' is formally known as a type 650 magnetic drum electronic data processing machine . . . It's just plain '650' to friends like us.
>
> "And really, 650 standing alone isn't smart. It didn't come in under its own power and set up headquarters itself. People had to bring it in and help it sit down properly on the third floor. People here will tell it what to do. And people will get better jobs here because of it. (How true and prophetic that was!).
>
> "State Farm is the first automobile insurance company or fire company to make use of this advanced type of data processing machine in all regional offices . . . A total of 14 machines will make State Farm the biggest nationwide user of such equipment and a pioneer in the adaptation of electronic machine to a decentralized system of offices.
>
> "Announcing the big step, Edward B. Rust, (Sr.), executive vice president—operations, said: 'We are sure the IBM 650's will not only provide better, more creative jobs for our working people, but will help us produce more complete service and greater-than-ever savings for our policyholder members, through great efficiency gains in our expanding operations.'"

Our future president had put his prestige behind this project and at the same time, although not in so many words, had thrust both a formidable challenge as well as a great opportunity our way. It was no longer a time to predict what this "Electronic Marvel" could do but it was now time for the four of us to prove that his confidence in our plan and in us was not to be in vain. It was time to go to work!

Everything did not work quite as smoothly as one would expect from the ALFI article. First of all we found that this 'Marvel' could get quite "steamed up" and did with such emphasis—to the extent of 48,000 BTU's per hour or enough BTU's to heat a normal five room home—that a special air conditioning "bonnet" had to be placed over it to draw off this excessive heat to a maximum of 90 degrees or it would blow something and quit.[36] Other problems with the 650 itself almost immediately plagued us. Within the next fifteen days, we encountered severe electronic tube problems and we also learned that its 20,000 positions of memory were insufficient for the first program that we tested on the system—the program that would underwrite applications and calculate the premium rates was too large and had to be separated into two programs. This was merely a sample of the many unfamiliar challenges we faced that fall as we moved steadily toward our goal of having the entire system problem free and ready for initial installation by year-end.

With the exception of the "borrowed" assistance of many individuals during the year, some of whom have been identified, we had not added any additional permanent employees to our Electronic Research Unit until October when we hired our first additional employee (fifth overall), our first secretary, Delores Blickensderfer, who would be my secretary for some twenty five intermittent years until my retirement in 1980. Our formal typing had been done by secretaries and stenographers from the other units within Planning & Research for which we were overwhelmingly grateful.

Needless to say the five of us worked night and day finishing the testing and documentation of our programs and instructions in a frantic effort to meet our deadline. We also began briefing the Iowa Division personnel on December 5th and processed our first actual Iowa test work through the 650 system on December 8, 1955. On December 13th, we sustained a severe and wholly unexpected blow when the 650 "blew out" a bearing! Wow! That left us shaken and ambivalent because it completely destroyed our objective to get the Iowa "experiment" started and yet gave us such a needed respite that some of us could take a week's vacation for the first time that year.

IBM was able to get an entirely new magnetic drum for us from New York but lost it during shipment somewhere in Chicago. By December 16th, they had the new drum ready for installation, but by that date we had delayed the Iowa beginning date to February, 1, 1956. This naturally relaxed our hectic, frenzied effort to meet the January 2, 1956 deadline into an extra month of orderly, controlled activity which might have otherwise been a disastrous beginning, despite our disappointment in the delay.

So this was the situation on January 2, 1956:

1. There were five of us in the Electronic Research Unit and we had been relocated on this date to the third floor-north along the west wall within the glassed-in area that long-time State Farm people will remember as the former "machine room". This room was merely large enough to accommodate 10 desks in a very tight alignment of 2 rows of desks with five desks in each row.

2. The company was operating everywhere on the 604 Program installed during 1955 except in Canada, which continued to operate under its manual system for a few more years.

3. The 650 system was located on the third floor in the Bloomington Branch Accounting Department which location it occupied before the establishment of the Midwest Office. Initially, the 650 system was used exclusively by our Electronic Research Unit.

4. The company, for the first time, had been subjected to an enormously large increase in machine processing (data processing) costs, which were approximately $800,000 for the automobile company exclusively. This total included the cost of one IBM 650 Computer at $3750 per month rental cost, the cost of some twelve 604 Systems companywide, and the cost of accounting machines and peripheral IBM equipment in use. This was when the company's 1955 earned premium totaled $220,423,000. Obviously, no production benefits had been realized yet from the 650 computer.

5. Although I have purposely decided to omit information on specific salary costs throughout this book, I will discuss total costs in a manner that describes them in relative terms. As we began this system our salary costs were quite low because the great pressures for programming expertise had not surfaced. We were naive pioneers, thankful for the opportunity offered us, and never really foresaw the great pressures that would "hit" the software labor market in the future. In fact, the mere word "software" to describe program code had been invented only recently.

6. Most importantly, we had another month to "finely tune" our programs and the entire system in preparation for the Iowa system installation. As it turned out, we needed this extra month because we finished this fine tuning at 11 PM, late night January 31, 1956. However, it turned out to be anything but fine tuning because the last task we left for the "incidental" completion of our preparations (it was thought to be such a simple task) was the wiring of the IBM Collator Board used to merge the IBM heading cards and the premium cards together in order to print the various policy forms.[26] This turned out to be a most challenging task requiring the efforts of everyone involved in the program including a specialist from IBM. Obviously, after five or six intense days, we were successful in completing that task "barely" on time.

Iowa—650 System Experimental Division

Our preparation for the Iowa implementation included a "dress rehearsal" on January 30th which revealed some important problems which had to be addressed. Finally, we began the most important test of our abilities and stamina of our collective lives since this was the first attempt to place an insurance operating division, Iowa, on a system using an electronic computer—the 604 was a mere mechanical calculator. It worked and worked well! By the 3rd day, according to my diary, not only were our programs functioning with some very minor problems, but the Iowa employees were handling it well and were surprisingly quite enthusiastic about the system and honored to be pioneers in their own area of operations—they also felt a need to "make" this system work properly.

In the spring of 1956, we had the Iowa Division working well on this new 650 system and we were located on the third floor-north, working hard to program the system for the remaining home office and regional office operating divisions. This entailed program changes for nearly every division, especially those that had special rating bureaus, special state insurance laws and other special decrees enunciated by a few State Insurance Commissioners. States that had the most special requirements were Texas, Virginia, North Carolina, Louisiana, and Wisconsin. Nearly every state had some special requirement which we had to recognize and for which we had to prepare special program changes and instructions—some of which we missed until after the program had been installed and had caused a "grievance" (sometimes worse) within that division or branch office. Some of these special requirements were "softened" later by revisions via state legislation. All of this added to our already heavy burden of programming, training, and travel to the twelve branch offices which had 650's installed during 1956. Among them were the Mid-Atlantic (Pennsylvania), and Missouri/Kansas offices which opened their doors during 1956 while we were in the process of installing this system country-wide and which we completed on November 26, 1956 with the installation in the Southern Office, Birmingham, Alabama.

During the year as the 650 Program was being installed countrywide, a special effort was made to inform all employees, especially those who had at least some involvement, all about the new 650 Program and its effect upon them and their office. The first such organized meeting was at the Service Superintendents Conference held in Bloomington on February 14, 1956. The 650 Program was working well in the Iowa Division. We were indebted to that Division for its eagerness to describe the system to those in attendance at the conference.

Additionally, we established a schedule for key personnel from all branch offices to visit the home office for special training on the 650 computer as well as details of the production that emanated from the operations of the system. This was needed especially for those states with special insurance laws and requirements. It was a new concept to bring teams into the Home Office for such extended training, which required at least one week and sometimes two or more weeks for offices with special requirements. Although twelve branch offices (Canada was excluded because of insufficient work load) sent representatives to the Home Office for this training, it was especially a "long haul" for those from the west coast which was primarily by train at that time.

The burden was especially heavy on the six permanent members of the Electronic Development Unit, for which the name had been changed from the "Electronic Research Unit" in December of 1955. The six members carrying the "load" during 1956 were the four original members plus Delores Blickensderfer, Secretary, and Elmo Gentes. This group plus those "borrowed" not only had to brief individuals from the Home Office and branch offices, but we were sending teams out to the branch offices at a time when the system was being installed in at least two separate offices simultaneously. On July 24, 1956 we began multiple installations when Roger Woodrey led a team to the Southern California Office while John Janes and Elmo Gentes installed the system in the Michigan Office. It is certainly an understatement to say this was a "harried" time for our Unit.

Outside Interest In Our System

To my surprise as I reviewed this period,[26] I found we were also being bombarded for requests to explain our system to outside interests who had learned of our pioneering effort. For example, during the early hours (3 AM) of April 17, 1956, Roger Woodrey and I came into the office to work on necessary programming in order that we could spend the day with representatives from the State Automobile Insurance Co. of Indianapolis, Indiana, who were interested in our new system. On November 14, 1956, we were honored by a visit from a very good friend of State Farm, the president of the Groupe Drouot Insurance Companies of Paris, France, Mr. Georges Tattevin. (I had the good fortune to return that visit on August 2, 1965 when I was escorted around the Groupe Drouot headquarters in Paris.)

Industry Associations also were eager to hear about our program. It may seem difficult to understand the intensity of this interest by other companies in the insurance industry at that time; but, it must be remembered that with the exception of a few large companies such as Allstate, Nationwide, Aetna, and a few others, no one had entered the computer environment to the extent that we had. Add to this the fact that State Farm was already the largest in the automobile insurance industry and you have a great interest in our project. Our staff was not large enough to handle these requests; nevertheless, we honored those requests whenever and however possible.

Among those requesting us to explain our system was the Insurance Accounting and Statistical Association, known as the IASA, at a convention in the Hotel New Yorker, in New York City. This meeting was quite significant because Allstate Ins. Co., also a member, was invited to explain its system. At that time, although it was low key, the industry looked at the two "giants" as being in a competitive "electronic mode", and in some ways we were. This general appearance of competition was fueled considerably by the marketing teams of the equipment vendors supplying the computers. IBM supported State Farm vehemently whereas Allstate and others used a few other computers during those early years. This type of manufacturer competition reached its zenith during the early 1960's when Allstate used Datatron computers; Nationwide used, to some degree, NCR computers; and others used RCA equipment, etc. However, this type of industry competition subsided appreciably when IBM announced the 360 line of systems in the mid-1960's and many of those companies converted to IBM computers, as did our own State Farm Life Company in later years. This invitation to explain our system to the IASA is only an example of a number of similar requests that confronted us at this very busy and crucial time. This was a new and difficult experience for us.

Special Problems Encountered

We also encountered problems never discussed in the "shiny brochures" published by IBM and the glowing predictions of what this system would accomplish. Adding to those problems were the equally glowing memoranda we issued to the operating divisions explaining what the system would do for them, which sometimes did not materialize as easily as "advertised". Some of the more important problems, a number of which were completely unexpected arising during the installations of 1956, and other associated events which occurred during that year, were:

1. The work load was much heavier than expected requiring the addition of more borrowed as well as permanent employees to our Unit.

2. Employees added permanently that year were:

   Elmo Gentes—June 20, 1956
   Kenneth Reeser—December 27, 1956

   (Reeser caught my attention because of a sign which he had placed on the Card Read-Punch Unit of the 650 which he was operating. This sign boldly proclaimed, at a time when we were having 650 machine problems: "Never fear, Reeser's here!" I thought anyone that "brazen" at a time like this must be given an opportunity to "put up or shut up". As a hilarious consequence of this, about two months later, at the very moment that Reeser was standing at my desk "guaranteeing" the flawless accuracy of a 407 board he had sent to the branch offices, I received a cross-country phone call from California complaining of a serious problem with that specific board. Needless to say, there were no more guarantees. We all learned, anything can happen and usually did! Happily, "Kenny" always did a fine job as did Elmo Gentes.)

3. Employees borrowed for special jobs in 1956 were:

John Goergen—to wire IBM 407 boards for the Eastern Office.

Don Rynell—at different intervals to wire computer and printer boards.

Don Halsema—at different intervals to wire computer and printer boards.

Arthur Dornaus—To assist in the briefings required by the 650 installations.

There were no doubt a few others, but I have no record of such occurrences. I would be remiss if I did not explain that Arthur Dornaus, and other members from Planning & Research, although "borrowed" from the Systems Development Unit viewpoint, were simultaneously performing many tasks that ultimately became part of their daily routines in the forthcoming computer environment.

4. The 650 computer did not perform as fast or as efficiently as we thought it would and therefore immediately became a problem for the relatively high volume we were experiencing in the Home Office divisions and in some of the larger branch offices. To enlist IBM assistance in solving our system efficiency problem, Robert "Bob" King, IBM sales representative serving the State Farm Account, and I flew to Endicott, N. Y. on April 12, 1956 to learn what could be done to increase the speed of our systems.

   Among a number of suggestions offered was the symbolic programming code known as "SOAP". Another suggestion was a technique called "program optimization", which I explained earlier. We had been introduced to these concepts before when we were interested merely on "getting started". We now were experiencing serious problems and were much more serious about learning all we could during this trip to Endicott. It turned out that at this crucial period, we adopted neither suggestion although Roger Woodrey did a truly fantastic job with the rating programs during the next couple of years using the optimization technique by which he increased the processing speed 300 percent.

   SOAP was an acronym for Symbolic Optimal Assembly Programming, the objective of which was to have us move from strictly numeric word for word programming to our first introduction of the use of symbolic terms for each function of a program step or "word". This had been used on larger IBM 700 Series systems but we learned it had not been extraordinarily successful.

   After further discussions at home with Woodrey, Janes, and Hickey, we determined SOAP to be too cumbersome for the limited advantages it offered. We never implemented symbolic programming until the introduction of the next system, the 1400 System in the early 1960's. (Hopefully, without becoming too technical, symbolic programming is simply a technique of using an alphabetic or other "symbol" to represent an operating code or memory location of the computer's memory. Various actual numbers or alphabetic characters can be assigned or reassigned by the programmer while programming or by the computer during program execution. Under much more sophisticated programming techniques currently in use, the programmer never knows, except under very unusual circumstances during program testing, the actual numeric or alphabetic characters the computer assigns to such symbols.)

5. We found that the 2000 word Magnetic Drum had a serious storage limitation which IBM solved partially in 1959 by doubling the size of the Drum to 4000 words. Despite this increase, we had to split our programs into smaller segments. The first effort, discussed earlier, was to separate the Underwriting program from the Rating program. We were forced to use this technique on many of the original programs written at this time. This solved the immediate problem but similar storage space problems plagued us as long as we were using the 650 computers.

6. The original 650 computer had large vacuum tubes which sometimes overheated and caused problems which IBM later solved and we assisted in the solution by increasing the amount of cooled air flowing directly through the computer. This solution included the building of a special bonnet, alluded to earlier, over the top of the computer with a special fan forcing the over-heated air out through this bonnet and through a large pipe which funnelled the heat directly to the outside of the Home Office building onto the alleyway west of the building. Added to this was the problem of large cables lying on the floor subject to serious damage. In those early years, raised floors had not been invented and buildings were not constructed for easy conversion to such floors even if they had existed. To solve those problems, IBM had special "floor ramps" about 2 inches in height built to protect these large cables which connected the three units making up each 650 system.

In addition to completing the installation of the 650 systems throughout the company while simultaneously being confronted with the changes and problems discussed above, we encountered and experienced other situations unique to that era.

Was The 650 System Affordable?

One of the serious problems of pioneering a project of such magnitude is the question: "Are we spinning our wheels, or is this project really "paying off"? Management was especially eager to find the answer to that question. Carl Marquardt and I spent several days cloistered with others in an effort to find that answer. The estimated rental costs for the equipment alone had risen in the 1955-1956 period to an excess of $1,000,000 per year for 14 computers plus labor costs (not available), which nearly gave everyone in management "heartburn", although they were almost insignificant when compared to current Data Processing costs. But when compared to the advantages the system brought "over time", it proved to be a good investment. It required a couple of years before we could be sure of that conclusion.

In those early years, these savings were basically in the work that otherwise would have required additional newly hired personnel; and, the ability of currently employed personnel to perform their tasks more quickly and accurately than under the previously non-computerized system. This was reflected immediately in the increase of the "policies per employee" measurement which we employed. The policies per employee measurement after less than three years of full operation revealed that the policies in force for all operating divisions (excluding field claims) increased nearly 10%. Naturally this is not attributable entirely to the 650 Program but inasmuch as the increase became immediately noticeable after the installation of this system, much of this increase can be credited to the new system.

I must emphasize here that this increase occurred without ANY extraordinary pressures to increase employee production or any release of operating division personnel. Despite this increase in productivity, additional personnel were hired over this time period because of our continuing phenomenal growth. I must emphasize that no one has ever lost a job directly because of computerization at State Farm! This was true in the early days of computerization and is true today. This is a fact I shall cherish forever and I know State Farm's management shares this viewpoint.

Exploring New Systems & Programs

We were also confronted at that time with an extraordinary pressure to keep in tune with the enormous changes occurring in this burgeoning field of electronic computers. It is recognized that in the current environment of specialization in 1991, there also is great pressure. But the pressures at that time were unique and stemmed from the fact that a very small Unit had to keep the current system in "top shape" while keeping abreast of ALL new technologies—not merely those in specialized areas. It was a very difficult time with great pressures—some of it self inflicted—to keep costs at a minimum.

Therefore, in the midst of implementing the 650 system countrywide, we made a number of trips to keep abreast of the new computer technologies which were coming at us "fast and furious". On October 7, 1956 while some of us were implementing the Pennsylvania Office, we also arranged to visit IBM in New York City to study the cost, values, and capabilities of the very large IBM 705 system. We also were given an "advanced" briefing, not necessarily available to everyone, of an experimental model, not yet in production, of the random access concept which IBM had pioneered and was marketing diligently during that era. (I am not sure what model of Ramac it later became, possibly the Ramac 1305.)

We have described the 650 computer, the objectives established for our Systems Development Unit, and the effect of such an enormous percentage increase of data processing costs; but, really what did we have in this 650 system and what did it really do for State Farm? Let us examine those questions.

The 650 system completely eliminated the type of processing done under the 604 Program. The most important work performed was the underwriting, rating, and issuance of automobile policies automatically; and the statistical summaries for management, state, and industry reporting. The results of the rating process were identified by one of twenty four different transaction codes along with the premium amounts punched into accounting detail cards from which accounting, statistical, and corporate management records were summarized and printed by the IBM 650 computer and 407 printer, respectively.

As new or transfer applications were rated, a subsidiary punch card was produced, known as the Master Premium Card, which retained the basic coding information in punched card form for automatic rating of the renewal premium on the next renewal date, whether that was for 6 months or up to 36 months in the future. (Financed automobiles required renewal payments for the entire financed terms of twelve, twenty four, or thirty six months.) These were the principal far reaching changes never before performed by a computer at State Farm.

For those readers not familiar with State Farm, it is important to remind you that we operate on a basic six months policy term which State Farm pioneered at its very origin. This means that every operation in geared around the six months term including rate calculations, proration of such rates for policy transfers with terms less than six months, and cancellation periods other than at the six-month premium paying date, known as our policy x-date.

Underwriting By Computer

Among the functions performed on the 650, the Underwriting Program was the most unique resulting in a legacy which has been preserved in "The Annals", a research manuscript written by James S. Burkart, CPCU, and which is now the "exclusive property of the Harry J. Loman Foundation and first publication rights accrue to The Annals".[40] Although a copy of this manuscript is in my possession I am unable to reprint excerpts from it without permission from the Loman Foundation. Knowledge of this honor was conveyed to State Farm in a letter received by Edward B. Rust, Sr. on August 30, 1976 as a result of research conducted by the Loman Foundation. This letter also stated:

> ". . . my research developed that State Farm was the very first company to undertake to utilize the computer to underwrite any type of insurance . . . " (Walter Moore, an Underwriting Executive at State Farm, and I met with Mr. Burkhart in January, 1976 as a result of a questionnaire received by Dr. Norman Vincent.)

After our early experimentation with this program which I personally designed and wrote, over the next 20 years a number of other companies attempted to write computer underwriting programs. To my knowledge, none too successfully. They were abandoned for the same reasons that State Farm abandoned this pioneering effort. Why did State Farm abandon it?

We had no prior data for a guide. Charles Foreman, now deceased, was an experienced Underwriter who was assigned to give us the basic concepts that underwriters use in making underwriting judgments of the acceptance or rejection of automobile risks. From that basic concept, we proceeded to outline and block diagram the first underwriting program. We established tests within the program that checked the information provided on the application against "tables" set up in the program. For example, we established a list of acceptable territories in the state. Each state had its own acceptable list. A territory not acceptable in this table, would either be rejected by the computer immediately or depending on the degree of importance of that rejection, be given another chance by passing another test, such as a test against the applicant's occupation. Keep in mind that in today's environment those tests probably would not be used nor considered valid.

The system tested an application against 21 different tests. Generally, a failure to meet any one of those tests would be a rejection. A few were not considered important enough to cause a rejection outright as mentioned above. In those cases, if the additional tests were acceptable, the system would accept the risk without any human underwriter intervention.

It turned out that most applications were accepted prior to a test which was very stringent—the occupation test. Our Underwriting Department was quite adamant about this restrictive test and as a result 55.35% of all applications were rejected.[44] This percentage represented a rejection rate of 92.03% for new business applications, 90.19% for reinstatements, and 29.10% for transfer applications, for which the restrictions were less severe. Again I wish to emphasize that today this test also probably would be invalid.

After about 18 months on this program, we decided to abandon it simply because it was too expensive to maintain it when such a high percentage had to be also reviewed by an underwriter. State Farm never again attempted computerized underwriting even though as late as 1975 other companies were still experimenting unsuccessfully with this concept.

Another interesting concept that we adopted with the inauguration of the 650 system, was the Master Premium Plan. This plan was based on the fact in that era most individuals did not trade automobiles or buy new ones as often as in the current era. This meant that once the coding for the computation had been entered on the premium input punch cards, it was quite likely that the same codes could be used for calculating the renewals 6 months hence. We adopted that concept in the Master Premium Plan by storing master cards for removal at the next renewal date—changing them only upon notification during that period of a coding change, cancellation, or lapse. Any significant change required re-underwriting anyway. Those punch cards were stored in renewal date order and therefore it merely required pulling the entire set of cards for that renewal date and routing them again through the 650 system for premium calculation. Any changes in the rates during the intervening period would reflect in the program changes that had been placed in the rating tables at the time of such change. This concept worked quite well and was used for many years until new and more powerful computer systems were installed.

Many of the other programs introduced by the 650 system dealt with statistical reporting. These were much faster and provided unique opportunities to perform tasks on a computer that were not possible under the previous, exclusively, tabulator systems.

Training Methods & Information Dispersal

Two other important facets of this early 650 system were the special training methods we adopted and the new method of disseminating the programs and operating division instructions pertaining to the system output that these divisions had to handle.

While today, whole divisions have been established and are managed by the Data Processing Department for training purposes, in those years most companies looked to IBM for such training. That was generally at IBM's expense under the "bundled" concept in vogue at that time. Under this concept, IBM furnished instructors, books, and the common utility programs required to "operate" the computers of that day. The result was that many times we would send individuals to Chicago or even to IBM training centers in New York state for such training. The only cost to State Farm was the cost of housing, meals, and travel costs. In some special situations, especially executive training, IBM also furnished meals, lodging and travel by using their own plane and providing the "Homestead", a beautiful old home, converted for training purposes. IBM had elaborate training facilities in both Endicott and Poughkeepsie, New York.

Although we at State Farm took advantage of these IBM facilities for our more complex training needs, we were not entirely happy with their basic training methods pertaining to the elementary 650 computer training. We, therefore, did our own training of new employees for those early "650" years. Roger Woodrey and I did nearly all of the 650 training and others in the Unit did the IBM 407 printer training. With the advent of the 1400 system in the early 1960's, we began to increase the use of IBM training assistance but only slightly. By the end of the 1960's we established our first "full fledged" training school under the direction of William "Bill" Wilkens, now Personnel Manager, Southeastern Office, Jacksonville, Florida. More will be said about that new training effort in Chapter V.

Electronic Data Processing Manual Established

The other element that the 650 system forced upon us was a new method of publishing the programs and information explaining how to use the output of such programs. The very first tool established for this purpose was the Electronic Data Processing Manual which was inaugurated on May 7, 1956. It was set up to provide information pertaining to all facets of computer operations. Included were instructions for operating the computer itself; how to prepare the input for the computer; and, how to distribute the output. The instructions included many other facets that required explanation to those involved in the entire panorama of computer processing.

That manual was basically a series of memoranda, the purpose of which was intended to convey the pertinent information temporarily until it could be written in a more permanent form within the old established Work Process Manual and other more permanent manuals affected by this information. Like many good intentions, during those early years, it did not always happen as intended. The program changes and new programs were published in such volume and such frequency that the permanent manual writers could not keep up with those changes considering the lack of technical writing equipment of that era. The result was that those "EDP Memos" as they became known, also became "famous" or rather "infamous" for their longevity. Much of that information never did get transferred to the permanent manuals as intended.

This E.D.P. Manual evolved into the primary source for information pertaining to the introduction of data processing information and thereby replaced the General Procedure Memos which were in use basically to disseminate procedures temporarily in the pre-computer era and which remained in effect for general information purposes into the decade of the 1970's.

The General Procedure Memo #170 was the source for the installation of the 604 Program, whereas the E.D.P.Memos were the information source for the 650 Program. Some of the most famous of these were the #479 and the #675 popularized later in the early 1960's with the installation of the 1400 Systems, discussed in the next chapter.

Period of Consolidation and Research—1957 to 1961

As we entered the year 1957, the 650 Program was well established in all regions and generally working well. The Automobile Company had installed twelve 650 computers in twelve regional (branch) offices while the thirteenth office, Canada, had retained its 604 system. Two additional 650 computers were operational in the Home Office. Those machines were in operation on at least a one-shift basis in most offices with some on a one and one half shift or two shift basis.[42] The procedures were built around many 650 programs encompassing most of the company activity from the time the applications were received in an operating division until the policies were issued, the accounting entries processed, and the statistical statements and management reports printed on auxiliary equipment, particularly on the IBM 407 Accounting Machine.[26] The entire system was quite successful.

Those of us working within this data processing environment were in a consolidation mood, making every effort to handle any changes, increase processing speeds, and eliminate all problems which might arise in the 650 program. There were plenty then and always will be plenty in any future system! Human nature and machines will never be perfect although depending upon your technical bias, machines may get, some day, very close to such perfection.

With that "heavy" prediction out of the way, let us look at the data processing environment, both at State Farm and in the country during this period of 1957 to 1961. We had just passed our first severe test with the successful implementation of the 650 systems companywide excluding Canada. We were placing our emphasis on improving the 650 system output and keeping abreast of new computer developments which continued to accelerate at an ever increasing pace.

We were extremely happy about the extra-ordinary support from all areas of our corporate management. This was extremely important at that time because we were not only pioneering a new technology—soon to be viewed as a necessity—the advent of the computer, but management was becoming increasingly "comfortable" with the extraordinary capital expenditures which accompanied this technology. At that time we really did not realize how very important this base of confidence would become within the next five years as we advanced to the second generation of computers, the IBM 1400 Systems.

The Systems Development Unit—the forerunner of the future Data Processing Department—was again being bombarded by requests to explain our system and by now they also wanted to know what we had on our drawing boards for the future. Therefore, the key members of our Unit often were asked to be featured speakers at the national conventions of such organizations as the NMAA, National Machine Accountants Association; IASA, the Insurance Accountants Statistical Association; GUIDE; the Guide International Association of Data Processing; and ACM, the Association of Computing Machinery. Some members of our Unit also belonged to a number of those associations whereas others belonged to selected single organizations.

IBM also increased its respect of the growing size and complexity of our system by adding to the IBM team two very experienced staff members, Guy McMillan and Glenn Reitzel. Reitzel joined us in 1958 as the replacement of Robert King, who moved to New York. Reitzel remained as the State Farm Marketing Representative until 1967. McMillan became National Account Manager for State Farm in 1958 until the year 1963. Also indicating IBM's interest in our efforts was the addition of Mel Deener, sales manager, from 1960 to 1967 and John Maggio, assistant in marketing, who joined the IBM team on August 10, 1959. Sam Chase, was IBM Peoria Branch Manager during this era from 1956 to 1963. (Sam Chase died in 1991.)

The result of all that IBM "power" that moved into Bloomington was not only that much more information was made available about IBM's newest products, but "a two-way street" of considerable IBM manpower assistance was to benefit State Farm significantly during the next few crucial years. IBM added technicians James Sepich, Kenneth Anderson, and John Moscato, who worked with us as if they were employees of State Farm. For this we shall be eternally grateful. (More will be said about this in Chapter IV.)

French Executives Study State Farm Data Processing

Among the most extraordinary requests which we received from outside sources requesting our time to explain our system was a request from the La'Abeille Insurance Company, Paris, France—a competitor of The Groupe Drouot Insurance Co., introduced earlier—to permit them to send two of their data processing executives to spend 2 months in the USA at State Farm to study our system and future plans from "top to bottom". This we did. It was an extremely interesting experience for both parties.

La'Abeille sent Albert Poirier, about 45 years of age, and Jean Festeau, about 30 years old, arriving in Bloomington on December 3, 1958. They planned to start a computerized system for their company and felt an on-the-job experience was needed. Both men were experienced in their own company's operations, with IBM systems, and electronic computer theory. State Farm gave them complete freedom to examine every facet of our system including our planning methods and how we executed those plans. This included sessions with our major departments including the General Accounting,[26] Statistical, Actuarial, and Claims Departments as well as the Midwest Office. We charged them nothing for this important information and their own costs were primarily for travel, food, and lodging.

Our Unit gained much from the exchange of ideas and the challenge they presented to us when they asked their "why's and wherefore's". We also made a couple of great friends as evidenced by the extremely friendly treatment my wife and I received when we visited La'Abeille in Paris during the summer of 1965. Albert Poirier spent an entire Sunday escorting us throughout Paris on a personally conducted tour, the duplicate of which we could never have received in any other way.

Among the interesting events that occurred during their State Farm visit was their desire to experience food which was plentiful in France but sparse in Bloomington—lamb meat. At that time, my wife, Freda, looked in vain all over Bloomington to accommodate them. It may have been available but she could not find it. So Freda told them, if they would accept her "experimentation", she would cook them a "leg of lamb" which they gladly accepted. They were profusely complimentary about her effort but she is certain it did not measure up to French standards!

On February 5, 1959, Poirier and Festeau left to return to Europe after a few additional days were to be spent in New York City. It was an experience for which they were exceeding grateful and which was equally beneficial for us. We would never experience anything like this again because in the intervening 30 years, life appears to have become too sophisticated and saturated with computer knowledge world-wide for this ever to happen again.

Systems Development Unit Moves To Fifth Floor

By 1959, the Systems Development Unit had outgrown its space on the third floor of the old Home Office building. We had moved to the east side of the fifth floor-south and had rejoined other members of the Planning and Research Department of which we were still merely a separate Unit at that time. Joining the Planning & Research Department on the fifth floor on March 30, 1959 was the recently formed Fire Company Planning & Research Unit under the supervision of Gordon Cushman. This Unit merely utilized space near the Auto P&R Department but was not a part of it. Within a year, with both departments growing rapidly, the Fire Co. Unit vacated that space again for Auto Company expansion. On this same date, both Richard "Dick" Andes, later to become Assistant Vice President-Service and Systems, and Richard Caines joined the Systems Development Unit.

Late in 1959 we had begun to think in terms of the next generation data processing system for State Farm with particular emphasis on magnetic tape operations.[46] In order to gain experience with magnetic tape drives, we announced that we would install our first drives on a Home Office 650 system in February 1960. In conjunction with this new tape drive system, a card-to-tape converter would be installed in the Michigan Office. The daily transactions in Michigan would be converted from cards to tape and the tape reels sent daily to the Home Office Statistical Department where they would be read on the experimental 650 tape drives and processed. The principal objective of this installation was to gain valuable experience in the handling and processing of magnetic tapes as a prelude to the next generation which would include not only tapes but other devices such as the Ramac disk drive, described later in greater detail.

Many other events, both within and outside of data processing,[46] were transpiring within State Farm at that time. Nationally, we were beginning to approach the end of the "Eisenhower Years" and a period of slowing economic growth. However, State Farm was continuing to grow rapidly and with that growth came many and varied changes within the company. It was an exciting place to work. Some of the more important events which occurred during that era were diverse and unrelated, therefore, I have enumerated each separately and in chronological order:[41]

1. On February 5, 1957, G. Ermond Mecherle, known affectionately as "Ermie", son of founder G. J. Mecherle, died in Arizona after a long tenure as a State Farm executive and was a Consulting Vice President at the time of his death.

2. The National Machine Accountants Association inquired if Myron Willke would lead its two day seminar on Insurance Rating and Computing—an opportunity happily accepted. That conference was held on June 24th through the 26th, 1957 at the Conrad Hilton Hotel, Chicago.

3. During the fall of 1957, State Farm for the first time linked all of its 13 regional offices, 17 of its largest claims offices, and the Home Office together via the Western Union facilities.

4. On October 22, 1957, State Farm began announcing to its Home Office departments "possible" changes in the regional office decentralization program which ultimately evolved into the current regional office management structure which at that time was introduced as the "Y" Program. The "Y" Program as it was ultimately structured, created the offices of the Regional Vice President, and Deputy Regional Vice Presidents for agency and operations. The position of Resident Vice President, then in vogue, was eliminated with some of the Resident Vice Presidents placed into the role of Deputy Regional Vice President-Operations.[154] Since that early date, some variations of the basic scheme have evolved but the fundamental concept exists to this day in 1991.

5. On November 15, 1957, A. H. Rust announced that State Farm in this 35th year of its existence had reached the significant milestones of having led the automobile insurance industry for the 15th year and had reached the five millionth policy-in-force plateau.

6. On June 3, 1958, the Sweeting Building burned. State Farm had leased space in it for some training classes, storage facilities, and you will remember an earlier discussion of the General Accounting Department use of this building for its experimentation of the IBM CPC computer during the years 1953 and 1954. It was located on East Street north of the Second Presbyterian Church.

7. On June 9, 1958, Adlai H. Rust was named Chairman of the Board and Edward B. Rust, Sr. was elected President of State Farm Mutual.

8. On January 2, 1959, we set up two distinct areas of responsibility which would be in effect for the next decade.[43] We established a Research Unit and two Maintenance Units within the Systems Development Section of Planning and Research. Elmo Gentes and John Janes were promoted to Assistant Superintendents of the Maintenance Units for operating division programming and accounting programming, respectively. Roger Woodrey, already an Assistant Superintendent, was assigned to the Research Unit. Myron Willke was Superintendent.

9. One of the headlines of the February 6, 1959 ALFI NEWS was that although 1958 had been a recession year for some insurance and other industrial companies, State Farm had another record-breaking year. Employee count rose 4.5% from 8946 to 9346 employees, and the agency force grew to 8046 agents, which totaled 17,392 individuals serving policyholders holding in excess of 5,500,000 policies in force. For the first time, this meant State Farm insured nearly 10% of all passenger cars insured in the USA. By the end of 1960,[6] only about two years later, there were 17 offices in existence, 11,599 employees and 8251 agents. Policies in force had risen to 6,176,521 with nearly $1,735,000 Life Insurance In Force and over $42,100,000 of Fire Direct Premium Written.

   Another measure of this growth was that in 1958, the Automobile company was handling an average of nearly 6,000 transactions per regional office per day. This translated into an average of 22,700 new applications, 163,800 renewals, 35,500 transfer applications, and 13,400 cancellations per week within the entire company. State Farm was growing tremendously—but thankfully, that has been its entire history!

10. It was announced in May 1959, that State Farm had begun insurance operations for the first time in the state of Maine. We were becoming a truly national insurance organization.

11. On July 9, 1959, in a memorandum addressed to E. B. Rust, Sr., Marquardt outlined the need and advantages of establishing data processing centers in the Home Office and regional offices which would independently operate and control data processing equipment previously under the jurisdiction of the Accounting Departments. Marquardt wrote, "When you have two such diversified activities (accounting & data processing) represented, I do not feel that you have the best type of organization, and one that is efficient and economical, serving the best interest of all concerned . . . "

    Marquardt recommended that the concept be adopted via the installation of a Home Office Data Processing Department and a Regional Data Processing Department in each regional office. These departments were to be responsible for operating the equipment only, while the Systems Development Unit would continue to be responsible for "developing programs . . . maintenance of those programs and the changes necessary thereto. They are (to continue to be) responsible for increasing the efficiency of those programs. They are (to continue to be) responsible for the research necessary for other types of equipment and the development of future objectives."

    As a result of this memorandum, this concept was accepted and the Home Office Data Processing Department under Arthur Dierkes, Director, was established as well as Regional Data Processing Departments under the supervision of a Regional Data Processing Superintendent.

12. On August 7, 1959, the Automobile Company transferred a 650 system, no longer needed in the West Central Office, to the Home Office as its second 650 system. For the first time, one system was assigned to the Systems Development Unit to be used "officially and exclusively" for testing purposes while a second machine was designated for use primarily for some eight other Home Office departments.[43]

13. On October 27, 1959, the Systems Development Unit of the Planning & Research Department began intensive work on the procedural outline and initial flow charts for a new 650 Tape/Ramac System. This research ultimately lead to the 1400 Tape/Ramac System.

14. On November 3, 1959, State Farm Mutual was introduced "officially" (remember we were given a sneak preview earlier) to the new IBM 1401 computer at a meeting in Peoria attended by Roger Woodrey, John Janes, and Myron Willke. That was the beginning of our serious interest in this "hot" new second generation computer. (The larger second generation IBM computer line was the 7000 series for which we had no immediate interest.)[2]

15. On January 20, 1960, Elmo Gentes, Frank Murphy, and Myron Willke flew to New York City to test California Auto Rates on the new 4000 word drum on the IBM 650 Test System. As mentioned earlier, from its inception, the 650 system 2000 word drum proved much too small. This doubling of the memory capacity alleviated but never did solve this problem completely. (Remember this meant that it now had 40,000 positions of memory—today we think in terms of megabytes or millions of characters or bytes. At that time, the lack of sufficient memory was an almost unbearable problem causing many hours of extra programming to fit the program to the available memory, or rewriting it, etc.)

16. The State Farm Life Company received its RCA 501 computer on February 10, 1960 with the goal of it becoming operational by March 1 of that year.[30] That system was the first RCA computer to be installed in any life insurance company anywhere. It was placed under the control of Frank Warber, Assistant Vice President-Electronics.

17. On March 1, 1960, we decided to discontinue our ongoing studies of adding tape drives and disk drives to the 650 systems as the next major system enhancement, to be named the 650 Tape/Ramac System. Instead, with the advent of the Second Generation Computers, (see below), we made an important decision to direct our efforts toward the IBM 1400 Series computers and named our new system the 1400 Tape/Ramac System toward which our research was directed for the next two years. This decision was announced companywide on June 12, 1960 in a 62-page booklet titled "Proposal for State Farm Mutual's Magnetic Tape/Ramac System" prepared for C. A. Marquardt and top management.[114] That proposal was formally approved within a period of a month enabling us to begin the card to tape conversion process which was fundamental to the implementation of the new system—the basic subject matter for Chapter IV.

18. On June 6, 1960, sixteen Data Processing Superintendents met in the Home Office auditorium for a two day conference. This was the very first data processing conference ever held at State Farm. This conference was the result of Marquardt's memorandum of a year earlier to E. B. Rust, Sr. According to the ALFI NEWS of June 24, 1960, "The purpose . . . was to outline the organization of the data processing department in each regional office: to define the duties and responsibilities of the department and to explain the division of responsibilities between data processing and other departments."

    Attending that first conference were the following men who were chosen as the very first superintendents of their respective offices:

Name	Office	Name	Office
Gordon Holmes	East Central	Don Hicks	Southern
Ira Howell	Canada	Bill Lowrie	Western
Joe Giroux	Northwest	Don Morrell	Michigan
Ivan Daley	Midwest	Steve DiStefano	Mid-Atlantic
Leon Overbeck	West Central	Wally Zimmerman	N. Central
Walt Hayes	Southeastern	Gerald Norton	South Central
Jack Begley	Eastern	Dave Homewood	So. California
Gene Shaw	Texas	Bob Hamilton	Mo./Kansas

19. At the Annual Meeting of the State Farm Board of Directors in early June 1960, Richard Stockton was elected Vice President and Treasurer of State Farm Mutual and Robert Noel was elected Vice President-Operations,[45] the position formerly held by Stockton. Noel advanced from Assistant Vice President-Operations.

20. July 1, 1960 was the day when Arthur Dierkes was named Director of the newly formed Home Office Data Processing Department (referred to as HODP) as a result of Marquardt's memo to E. B. Rust, Sr., quoted earlier. Dierkes, whose position became a staff function to Marquardt, moved to an office on the fifth floor-south of the old Home Office Building as a member of the Planning & Research Department.

21. On October 14, 1960, State Farm announced the signing of contracts with Jack Benny and Don Wilson to be on Sunday Night television representing State Farm as co- sponsor of their show. The show began airing on October 16, 1960.

22. On October 26, 1960, the Systems Development Unit started a new trend of utilizing the computer expertise of trained regional office data processing employees to assist in the programming and testing of those programs which were to be used with the next generation of computers. We "borrowed" Norman Cover from the Florida Office and Alan Wood of the Northeastern Office. Their assistance was extremely beneficial at a time when experienced personnel were difficult to find and even more difficult to train because of the urgency to accelerate our research with limited manpower in the Systems Development Section. They remained with us for many months during the development of the 1400 System. We ultimately offered each a permanent position in the Home Office but both preferred to return to their respective offices.

23. On December 5, 1960, Willke was named Director-Electronic Data Processing Research with an office on the fifth floor-south, of the old Home Office Building. The Systems Development Unit thereafter was known as the Electronic Data Processing Research Section of the Planning & Research Department, generally known as "EDP

Research". On this same date, the "maintenance" functions within the previous Systems Development Section, supervised by Elmo Gentes and James Hickey, were placed in the Methods & Procedures Section of Planning & Research under Clayton Sturgeon. (This division between research and program maintenance was again eliminated in 1964 when the Electronic Data Processing Research Section was made a Division within the Planning & Research Department.)

24. On December 5, 1960, Edward Shelley was named Assistant Vice President in the Fire Company.[43] (Much more will be said about Shelley in Chapter VI when the Fire Company data processing merger with the Auto data processing is discussed).

25. The newly finished Data Processing Annex, attached to the Midwest Office (now the old Illinois Office), on December 13 and 14, 1960 became the recipient of the IBM machines previously housed in the Home Office. This equipment was placed under the supervision of the recently formed Home Office Data Processing Department.[43] This Annex became known as the "Data Processing Center", housing all data processing equipment used by both the Midwest and Home Offices and remained that way until the new Corporate Headquarters was occupied in 1973. This new Data Center provided for a much needed 48,000 square feet of floor space on two floors with about 11,000 square feet of raised floor—the first raised floor ever built for computers at State Farm.

26. On December 23, 1960, Arthur Dierkes and Clayton Sturgeon were named Assistant Vice Presidents for Data Processing,[43] and Methods and Procedures, respectively.

27. On this day, July 7, 1961, IBM finished "checking out" and turned over to State Farm the very first 1401 computer of many that were to be installed throughout the regional offices during the next few years.[26] This system was used exclusively initially by EDP Research for testing the 1401 portion of the future 1400 System. That 1401 was temporarily housed in the Midwest Regional Office before it was moved to the new Data Center and placed on the raised floor section.

28. By August 16, 1961, interest in the new 1400 System had developed enormously. As a result, EDP Research was asked to explain the system and its objectives to most of the top executives of State Farm including President E. B. Rust, Sr. That meeting, which was opened by Carl Marquardt, nearly filled the auditorium on the 13th floor.

29. On December 10, 1961, the first run converting Iowa IBM heading cards into the first Master Tape Records ever produced onto

magnetic tape by State Farm Mutual was completed successfully. The entire conversion process for Iowa was completed the next day after many hours of processing.

Enter Second Generation Computers

As we examine the three years 1959 through 1961 in greater detail, we find that we were increasingly busy as we began serious research into the capabilities of Second Generation Computers and their place in the State Farm operational scheme. That research was particularly driven by the accelerating improvements of computer technology occurring at that time with particular emphasis on IBM's newest computers since IBM by now was clearly the acknowledged leader of the computing industry. At this time we were particularly interested in the IBM 7070 and 1401 computers.

The extraordinary interest in the second generation computers was "powered" by the invention and introduction of transistors as the singularly most important element in the technology of this new generation of computers. Transistors replaced vacuum tubes in the electronic circuits resulting in a massive increase in computer processing speeds,[44] improvement in accuracy, and a significant reduction in the need for coolants in the largest systems because of the elimination of the heat producing vacuum tubes. Transistors produced very little heat.

The invention of the transistor was the result of years of research by the AT&T Bell Laboratories for which William Shockley, John Bardeen, and Walter Brattain were awarded the Nobel Prize in 1956. The transistor was mentioned in the New York Times on July 1, 1948 in an article ignored by most newspapers but not by scientists who had been watching for news on the progress of "solid-state" research which this embodied. From then on, competition in the use of the transistor in computer technology became almost "frantic" especially after a follow-up scientific article in the Physical Review by Bardeen and Brattain, two of the co-inventors. Two weeks later one of IBM's scientists wrote, "It would appear that this device should have considerable application in our business".[50] With this IBM was, as were other computer manufacturers, "off and running"!

In an earlier discussion, it was pointed out that IBM's most prominent First Generation Computers were the vacuum tube oriented 704 and 709 systems, directed at scientific users, whereas the 705 was intended for commercial users. In 1959, IBM introduced its new transistorized computers, the new 7000 Series. The two most popular computers in that line were the 7090 specifically for scientific users and the 7080 for commercial users. These were at that time IBM's "top of the line" computers—much too large, we thought, for our needs. Our interests lay in the mid-range 7070 Series and even more so in the low end of the line—the 1400 Series. It was the 1400 Series that really caught our attention.[37]

To IBM's surprise, almost immediately after its announcement in October 1959, the appeal of the 1401 computer was so great that the sales force was being bombarded with requests for a compatible but larger system to match the 1401 computer which could use the same tape drives and therefore was "upward" compatible. This clamor was so great that IBM converted a system which it was going to announce as the IBM 310 but instead made it compatible with the 1401 and labeled it the "IBM 1410".[31] This compatibility, happily for State Farm, was both "vertically" and "horizontally". Vertically, because both systems could use compatible software and the new "Autocoder" programming language. Horizontally, because as new devices, such as the IBM 1405 and 1301 Disk Drives, were added to the 1410 system, the IBM 1405 Disk Drive was also attachable to the 1401 system.

We at State Farm were one of those clamoring for this larger compatible system. Hence, by 1960 IBM had begun to fill out its 1400 Series with its enhanced 1401 and 1410 computers and the newer 1440 and 1460 models which were added to the line. The 1440 was a disappointment for IBM and was never a popular choice among its clients. (State Farm ultimately installed many 1401, 1410, and 1460 systems—but we will leave that story for Chapter IV.)

The Very Popular 1401 Computer

What made the 1401 computer, the initial model introduced within the series, so popular? Besides its new features, first and foremost was its price—less than the price of a 604 and three 407 printers which was a common configuration during the early 1950's. To it could be attached card and tape devices with a range of memory sizes,[39] and a new 600 line per minute printer, which was its principal attraction. It was designed as a stand-alone system and, later by default, as a peripheral system for the larger 1410 computer. A small 1401 with card read-punch, and a memory capacity of 1400 characters—without tape drives—rented for about $2440 per month. Very small but inexpensive!

Although the 1401 was not the first IBM system to use transistors instead of tubes—the IBM systems 608, 7070, and 7090 were announced ahead of it—it certainly did become a worldwide favorite to a broad range of punch card users, both large and small. The 1401 system was large enough to be a stand-alone system for small companies and as a subsidiary system to larger compatible computers for nearly all medium-size and large companies.[39] Many companies, including State Farm, used the 1410 and 1401 systems in combination—the 1410 as the powerful processor and the 1401 as the high speed printing system. The 1410's power was enhanced with magnetic tape drives and the random access disk drives. The 1401, with its unique 600 line per minute "chain" printer, was the peripheral printing system. This chain printer was an extremely revolutionary device at that time since the only "high speed" printers available for the earlier computers was the 150 lines per minute wheel-type printing mechanism used in the IBM 407 Accounting Machines.[39]

The ultimate speeds attained on IBM chain printers was 2000 lines per minute. The ultimate memory size of the 1401 was 16,000 characters (16K) and the 1410 attained a memory size of 80,000 characters (80K). However, during our nearly three years of "initial" research of these two 1400 systems, we were limited to 4,000 characters (4K) of ferrite-core memory on the 1401 and 40,000 characters of ferrite-core memory on the first 1410.[40] The maximum memory sizes of 16k for the 1401 and 80K for the 1410 became available quite late and only a relatively short time before we were scheduled to begin actual production. We were quite happy about the extra memory but it did cause a delay in our scheduling. (More about that delay later.) This all translated into a combination of computing power for State Farm that was many times more powerful than the 650 systems installed and operating company-wide. The 1400 Series systems gave us a flexibility and printing power far superior to anything we had ever experienced before. Yet, ultimately these systems also proved to be too small.

Competitive Second Generation Computers & Systems

While IBM was making these far-reaching moves with its second generation systems, its competition was also making headlines. There were indications that competitors were beginning to view IBM as the de facto leader of the industry and therefore it was at this time through acquiescence that IBM was starting to set the computer industry standards. That fact made the second generation era also a strange computer marketing era since IBM's competition also was not ready to "throw in the towel".

During this period, General Electric and RCA made strong challenges to IBM with the introduction of their new systems. However, it appeared to me that the strongest challenge came from Honeywell with its plug-compatible concept. Nevertheless, from the viewpoint of marketing volume, IBM's greatest competition came from Sperry Rand, Control Data, Honeywell, Burroughs, General Electric, RCA, and Philco—in that order. The order of the marketing strength was constantly changing and some of the weaker competitors dropped from the scene,[2] such as Philco. The order "jockeyed around" as some of them lost strength e.g. Sperry Rand during the early and mid-1960's while RCA improved its position. Meanwhile, IBM was improving its position as industry leader to the point that some were calling this competition as "IBM and the seven dwarfs".[2] (This was not quite accurate at this time although later it became a virtual fact—universally known.)

It must be said, however, that during the period of the second generation computers, IBM was only beginning to solidify its position. Sperry Rand, with its great start with the Univac along with a cross-licensing agreement with IBM signed in 1956 was in a very strong position initially. Honeywell, General Electric, Control Data, and RCA and to a lesser degree others, were still trying to meet IBM across the marketing spectrum even though, as I pointed out earlier, they were beginning to sense that their fortunes were going to degrade further in the not-too-distant future.

But this march to stardom for IBM was not that easy. Something strange happened on the "way to the ball park" which temporarily delayed this "pennant drive". Those competitors at that time made another attempt to stay in the "pennant race" and even made a very strong effort to supplant IBM in first place or at least wrestle Sperry Rand for second place.

In order to combat, at least to delay, IBM's march to dominance, computers such as UNIVAC'S Type 80 system were engineered to handle IBM software—a concept widely used today but never used before the early 1960's. Honeywell, also building its second generation machine went a step further and used a concept popularized a few years later as "plug compatibility". This simply meant that such Honeywell computers were advertised as being so in tune with the IBM computers' capabilities that a client could unplug an IBM computer,[2] plug in a Honeywell and be instantly operational.

This concept was augmented by Honeywell's introduction simultaneously with an accessory called the Liberator, which permitted its H-200 Series computers to utilize programs designed for IBM's 1400 Series. State Farm never tested this theory because we were somewhat skeptical about anything being quite that easy. Our investigation led us to believe that although Honeywell's claim was basically valid, other companies did have some difficulties.

Honeywell did sell a sizeable number of their "plug compatible" systems with the dual effect of:

1. Making Honeywell a legitimate competitor to Sperry Rand, so much so that I felt it was going to give IBM its strongest competition.

2. It made IBM squirm for a short period of time until the advent of IBM's new 3rd generation 360 Systems because old IBM customers were beginning to turn in their 1400 systems for Honeywell's H-200 systems.[2] This became so critical that one IBM salesman said "it hurts" and "you don't . . . need much of this . . . for negative commissions".

IBM did survive this test in fine shape albeit with some internal concern. "Stay tuned" for Chapter IV and more information on this continuing saga.

At this time, another type of curious competition was continuing which began in 1955 as we began our entry into computerized insurance processing. You will remember my reference to the interest of other companies in the comparative advances of Allstate and State Farm. As often happens, Allstate and State Farm data processing personnel had the greatest respect for each other and often visited each other's Home Offices and computer installations. Although spurred by the interest of others, between the two organizations we felt only a minimal amount of such competition. I am sure the Allstate executives shared this viewpoint.

In order to give you the "flavor" of that competition, I would like to share with you some key notes that I made of a visit that Marquardt and I had during those early years. It was very important, we felt, to evaluate objectively and honestly the progress that Allstate had made in comparison to the basic concepts and equipment used in our company at that time. You will note that in my analysis, both of us had some advantages and disadvantages. Hence, some of my more pertinent notes:

> "A fair appraisal . . . in the realm of Electronic File Maintenance (is that) they are ahead of us. (This was because they were already using a Datatron 205 magnetic storage system and a 650 tape system while our systems at that stage were exclusively card systems.)
>
> "In the field of statistical and management, summaries and reports we were definitely ahead. (This was because we were including in our system the entire field of policy and claim statistical processing which they had not yet placed on their system.)
>
> "Allstate indicated a concern about the comparative slowness of the Datatron 205 file updating process, fearful that it could not get all that processing completed on a two-shift basis. They intended to use the Datatron 205 during the day exclusively for instantaneous coverage inquiry . . . and do their processing (file updating) on the second shift. . . . They were very uncertain . . . whether this could compete economically with their present procedure . . . of securing a coverage card from their manual file.
>
> ". . . They have a Datatron 205 with a Data File in their Chicago and Pasadena offices and a 650 tape system (no Ramac) in their Detroit office and no computers in their other offices. It appeared . . . they were not sure of the path they wanted to follow. Certainly they do not have company (regional office systems) uniformity as we do.

"(Based on this analysis it appears) State Farm is ahead of them because three offices have (different) systems and the other offices are still on the old manual system."

As you can see this was a straight forward evaluation, no doubt similar to the kind they made of us, which stated the facts as I saw them at that time. It turned out that our appraisal was apparently quite fair and accurate because the Datatron 205 was never installed company-wide and ultimately abandoned for an IBM computer system. We had then and over the years continued to have great respect for their data processing expertise and especially of their data processing management. In a few short years, this type of "direct" competitiveness was virtually eliminated as both of our systems became entirely too large and served somewhat different final objectives. Our focus turned toward the development of our next generation computer system with emphasis on being certain it would service our policy holders in the best manner possible.

Setting the Stage for our 1400 System

To set the stage for the discussion of the formulation and essential elements of our next system, let us first examine the atmosphere and environment in State Farm at this time. First of all, data processing had received a recent boost to its overall standing within the company with the establishment of a data processing department in each regional office with the Data Processing Superintendents reporting directly to the Operations Deputy Regional Vice President. In addition, Arthur Dierkes had settled in as the Assistant Vice President of the Home Office Data Processing staff function for operations reporting to Marquardt. The EDP Research Section had been given the clear responsibility for the research and development of new systems for the company. As director of that effort, I reported to Marquardt. (There had been a short period of time when I reported to both Clayton Sturgeon, Director—Methods & Procedures, and Marquardt—a dotted line on the organization chart. This happily, for all of us, was short-lived because of the confusion it created.)

The entire Planning & Research function under Marquardt including D. P. Operations (Dierkes); Methods and Procedures (Sturgeon); and, EDP Research (Willke), was located on the fifth floor-south. Additional space was needed even with the recent exodus of the Fire Company Planning & Research Department. Some of my EDP Research personnel were scattered including some on the sixth floor-south and a few desks were placed on the second floor of the Data Processing Annex attached to the Midwest Regional Office. Marquardt, head of the department and his secretary, Bess Dragoo, occupied offices along the south wall of the fifth floor-south. To say the least, we were crowded.

The Planning & Research department had grown so extensively that we will identify for the last time in this book, the entire membership of that department as of January 1, 1961. (That year was chosen because it was the last year before the beginning of operations under the 1400 System which resulted in a virtual personnel explosion in the entire department and yet as you will learn it was woefully inadequate in the EDP Research Section.)

Members of Planning & Research at that time were:[47]

P&R Executive	EDP Research		Methods & Procedures
C. A. Marquardt	Roger Woodrey		Arthur Dornaus
Bess Dragoo	John Janes		Thomas Thoennes
A. H. Dierkes	Richard Andes		Donald Taylor
Norma Campbell	Kenneth Reeser		Les Glenn
C. P. Sturgeon	Stuart Warrington		Francis Fairfield
Hazel Dalton	Charles Cappis		Daniel Gross
M. G. Willke	Richard Caines		Karen Van Arsdale
Shirley Rankin	Alan Wood		Gene Osman
			Ford Eckles
			Evelyn Arteman
			Paul Elvidge
			David Myers
			Carol Jahnke
			Jane Ballard
			Lola Jean Burton
			Richard Swanberg
		(*)	Elmo Gentes
			Frank Murphy
			Albert Wolff
			Marjorie Childers
			Cheryle Wilson
		(*)	James Hickey
			John Goergen
			Herschel Goodwin
			Mary Ann Robertson

You will note that Planning & Research had a total of 41 employees of which only 10 (including Rankin and Willke) were assigned to EDP Research as of January 1, 1961. The asterisks (*) represent the two units which were transferred from EDP Research to Methods & Procedures on December 5, 1960 as indicated in news item No. 23 earlier in this chapter. Because of the magnitude of the task of developing the 1400 System, some of the individuals under Gentes and Hickey were returned to EDP Research one by one over the next two years to assist us in the development process.

Although the movement of the units under Gentes and Hickey to Methods & Procedures left us understaffed, I was happy to have that additional burden removed since we were already running behind the tentative schedule we had established for the new Magnetic Tape/Ramac System or "1400 System" by which it became known. The units remaining in Planning & Research were primarily responsible for writing and publishing the methods and procedures to be used throughout the Auto operating divisions including the memos and other publications required to maintain the ongoing 650 systems. In addition, those units were responsible for surveying the operating divisions and data processing departments in the regional offices to be sure the operations matched the instructions sent out for the Work Process Manual and EDP Manual. This left us in the EDP Research Section free to concentrate on developing the 1400 System, which turned out to be all we could handle.

Development Of the 1400 System

Two extraordinary events were the moving force behind the research and development of our second major State Farm computer system, the "1400 System". (This name refers to the entire program not merely the computers.) The first and foremost event was the assignment given to Carl Marquardt by Adlai Rust to eliminate the x-card on which all basic policy information was printed. This assignment was made during the early days of Planning and Research shortly after I had joined the department. The second event was the emergence of the IBM 1400 Series computers and their phenomenal new capabilities in which we saw the possibility of doing through this powerful new tool what Marquardt had tried to do manually for more than a decade. Fortunately, it was not only powerful but relatively inexpensive.

It is true that prior to the introduction of the 1400 Series computers, we had done much thinking and even serious planning toward a 650 tape system but there always was the question of adequate power and versatility of the 650 to handle this next step in computer technology. (It really was not built to "power" a Tape/Ramac type technology.) It was not until the "preview" of the 1401 System in New York (discussed earlier) with its high speed printer did we become convinced that we now had access to a computer with the "potential" capability to handle the type of program that we were contemplating.

Marquardt over the years had often discussed with me the need and urgency of eliminating the cumbersome problems associated with the x-card when seemingly a dozen individuals needed that important information simultaneously. You will recall that the establishment of both Plans I and II dealt heavily with this and similar problems—the inability for the application and x-card files to be readily available for underwriters, rate clerks, and claims personnel simultaneously or when they were seemingly somewhere else or temporarily "lost". To help alleviate those problems, you will remember that the "hunt list" was established and Plans I and II were implemented.

That is the background for the "need" for the research and development of this new system. This entire process including the early research of the second generation computers (already explained); the formulation of the concept and publication of that conceptual proposal in a one-half inch thick booklet; the painstaking block diagramming and programming of the system; the training of the programmers and operations personnel; the preparation and writing of the preliminary methods and procedures; the massive conversion of several million punch cards into magnetic tape records for policies, claims, and accounting data; the testing and experimentation of the system within the Iowa Operating Division; and, the final "error free" implementation of the system within that division were the most excruciating "data processing experiences" that our EDP Research Section, and the Iowa Division personnel would ever encounter. A few other regional office personnel of that era might also wish to have been included within that statement.

That type of experience surely will never be encountered again at State Farm. That experience, the "essential" reasons for it, and the very successful implementation and operation of the 1400 System companywide as the aftermath of the Iowa Experiment will be the subject of much of Chapter IV.

As we entered 1961, the first of the "Camelot" years under President John F. Kennedy, we had 16 regional offices with two more to be added during the year, namely the Lake Central Office in West Lafayette, Indiana and the Northeastern Office in Wayne, New Jersey. The total number of regional offices increased to 19 offices during 1962 with the addition of the Florida office just prior to the initial installation of the 1400 System in the Iowa Division during October, 1962.

Early in 1961, we were virtually forced to delay the implementation of the first 1400 System for one year to 1962 because of the IBM forecast of a newer and larger 1410 computer and a larger Ramac Disk File—all of which was necessary for our 1400 System to operate efficiently. Much of this delay also resulted from our decision (explained earlier) to convert our concept of a 650 Tape/Ramac System to the 1400 Tape/Ramac System based on the promise of the newer, more powerful, and much better system being made available to us for the first time in late 1961 and early 1962.

IBM kept its promise and made the first 1401 computer available to us on July 7, 1961 which was initially delivered to the Midwest Office and later moved to the new Data Processing Annex. Its early use was restricted to EDP Research for testing the 1401 programs. Five months later, December 26, 1961, IBM delivered our first 1410 computer, which was initially restricted exclusively for testing programs by EDP Research. The Data Center was now ready for new equipment and the 1410 was installed directly in that center on the new raised floor. (I emphasize the raised floor because it was a new, very much welcomed improvement.)

The delay caused by the change in delivery dates for the new equipment needed for our system was very much welcomed since we recognized that this entire project loomed much larger than we had anticipated. Hence, our goal now was changed to implement the first system during 1962 rather than the initially scheduled date for early 1961.

Formulation of Policy Records On Magnetic Tape

During the early months of 1961, one of the more difficult problems facing us was the completion and testing of a program to convert millions of IBM cards from punched card records to magnetic tape records, which formulation would result in the placement of the policy records on tape. The second most difficult task for EDP Research, and an even more difficult job for the operating divisions, was the accumulation of heading cards, normally destroyed after policy issuance under the 650 System. These cards were now to be retained in each regional office until the 1400 System was installed in that office. Some offices had to retain those cards for nearly four years, i.e. the Mountain States Office which was not converted to the new system until 1965.

Keep in mind at that time there were no machine readable records on magnetic tape for the nearly 7 million automobile policies in force companywide. We had the choice of manually preparing this information from our hand written files or securing the information from the heading cards which were currently punched for preparation of new, reinstatement and transferred policies but destroyed daily after completion of the policy issuance process. We readily decided the latter was much the better and cheaper path to follow—but by no means an easy one for the operating divisions to pursue.

As part of the research in the writing of the proposal for this system, published June 12, 1960, we found that by the retention of these heading cards after policy issuance in all of our regional offices for the projected final implementation of the then planned 650 Tape/Ramac System, we would need to retain and store for several years some 84 million "heading" IBM punched cards countrywide in those 16 regional offices. It was estimated the cards to be converted in an office of 500,000 policies in force would number about 6 million cards. Assuming an average reading speed of 700 cards per minute on the 1401 computer, this would require approximately 143 hours of continuous processing to build the original policy master records on magnetic tape. A mammoth project indeed!

Because of the change to the 1400 System and the ensuing delay, the actual retention of these heading cards began in 1962 (except for Iowa which began storing cards in mid-1960) and eventually resulted in about 20% more cards to be stored by 1965 when the last office was converted. This meant the storage and eventual sorting and conversion of these cards into policy records in 21 regional offices which were in operation by 1965. The storage of these millions of cards required great care to prevent them from getting wet or otherwise deteriorated which would make them useless when that office was converted to the new system. (Happily, all offices had done such a superb job of card retention that this phase worked remarkably well over the next four years of system implementation.)

The basic conversion period in each office was divided into two distinct periods:

Period 1—All operating divisions, except for Iowa as the experimental Division, were to begin retention of the heading IBM cards early in 1962 and end 6 months prior to actual implementation of the 1400 System in that particular office.

Period 2—All offices, including Iowa, would begin 6 months before the installation of the system to prepare the necessary heading cards for all policies for which heading cards had not been retained in Period 1. (This was necessary mainly because some policies had financed terms which extended entirely over the length of Period 1 or for some other reason had not been reissued.)

It is not my purpose to go into any more detail concerning this process but merely to indicate that this was one of the intricate and comprehensive maneuvers we had to negotiate to build the policy records for this very complex system. These heading cards which included the policyholder name, address, and all other alphabetic-type of information printed on the policy declarations page together with the Master Premium Cards used for policy renewal, sorted together, enabled the 1400 System to prepare the policy records merely days before the system became operational in a given regional office.

During the two day period of December 10-11, 1961, after having had a relatively short period of time to familiarize ourselves with the first 1401 System delivered to us by IBM, we successfully converted the Iowa stored punched cards to magnetic tape policy records. With the exception of some expected "glitches", this process worked surprisingly well. We had actually formed our first set of "live" policy records on magnetic tape. It really raised our spirits!

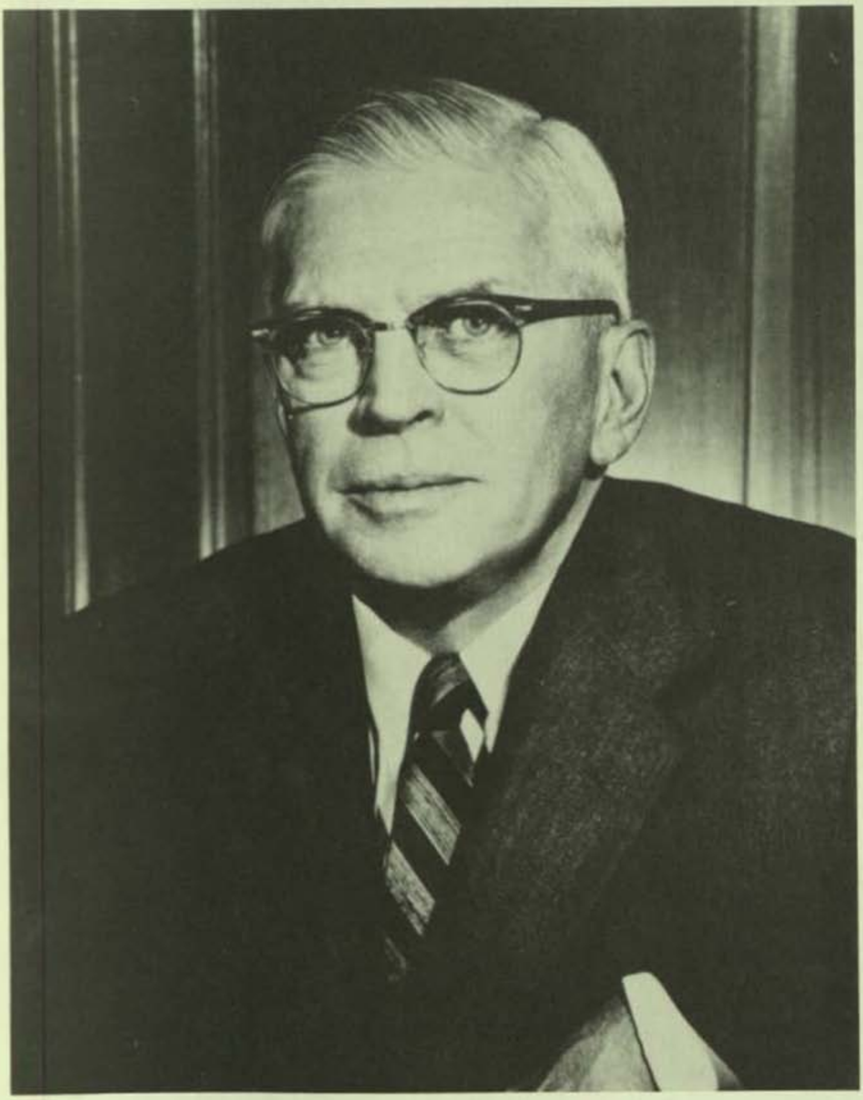
With the successful retention of these IBM cards already in operation for the Iowa Division and about to begin countrywide, as we reached the end of Computer Era I, December 31, 1961, we find that we are working literally night and day writing, rewriting, and changing our programs as well as testing those programs for the two new IBM 1400 computers. We were just beginning to learn of their incredible power. At least for us there were no previous computer systems with those capabilities with which we had any previous experience and with which we could make a comparison.

So as we were closing the books on the Computer Era I and about to enter 1962, we find that our data processing equipment costs had risen to $3,428,000 compared to less than $1,000,000 in 1955 when we initiated our data processing effort. This figure included at least one 650 in each office and a number of them with two systems along with one 604 in Canada and another in the Home Office. Our numbers were changing constantly, however, we had a total of about 25 computers company-wide plus the two 1400 systems used exclusively for testing.

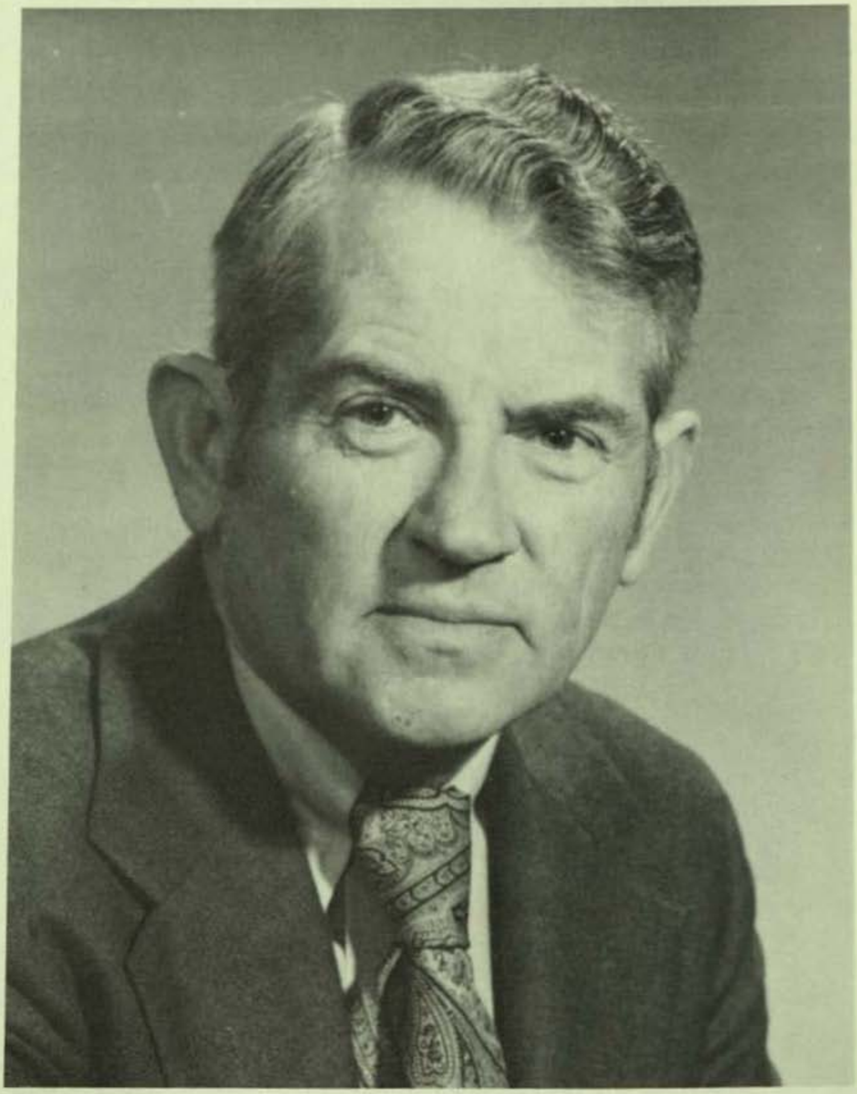
Our EDP Research staff had been increased by hiring Don Arndt on June 21 and Edward Doebbling on August 25, 1961. However, Al Wood returned to his original office leaving us with only eleven permanent EDP Research employees on December 31, 1961. This was entirely too few for this gigantic task but we were pioneers in a very conservative company atmosphere and were overly confident that this staff could do the job.

The overall Automobile Company programming effort was divided between the Methods & Procedures Section maintaining the 650 programs while EDP Research was concentrating on the 1400 System. The programming effort directed at the 1400 System had resulted in the determination that 12 separate very large magnetic tape passes or "Runs" were required on the 1410 for the policy issuance objectives without regard to the dozens of other runs necessary on both the 1401 and 1410 computers. (Those 12 runs eventually were reduced to eight. I have been told that remnants of the concepts which had been written into Runs Nos. 2 & 8 still existed in 1980, some 18 years later when I retired from the company.)

Finally, our staff had begun to feel the pressures of meeting the scheduled dates of installing the system in Iowa in mid-1962. Many on our staff were working long hours doing their own program testing at the consoles of the two 1400 computers, leaving their desks at the Home Office virtually unattended. This was the "atmosphere" within EDP Research as we faced 1962 and the beginning of Computer Era II.

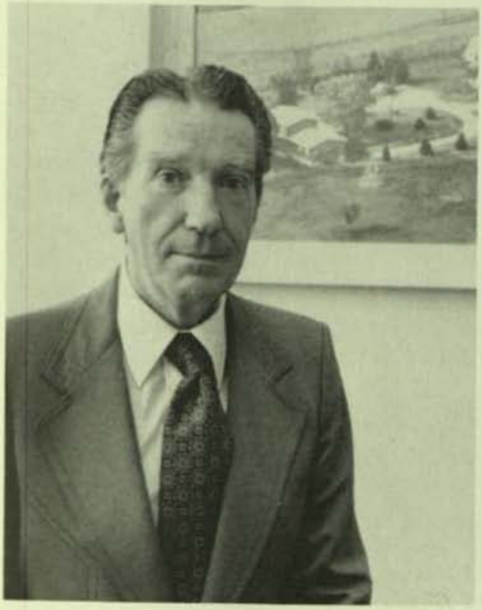


Adlai H. Rust, Third President & Chairman of the Board — State Farm Mutual Insurance Company.



Edward B. Rust, Sr., Fourth President & Chairman of the Board — State Farm Mutual Insurance Company.

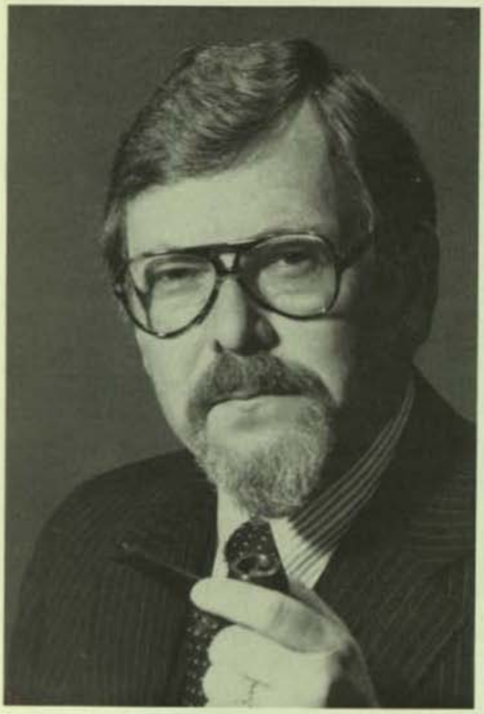
(Right) Arthur Dierkes, Assistant Vice President — Data Processing.



(Left) Clayton Sturgeon, Assistant Vice President — Methods & Procedures.

(Above) Four "Horsemen" — Founders of Data Processing at State Farm Mutual Insurance Co. — Roger Woodrey, Myron Willke, James Hickey, and John Janes — (1985 picture).

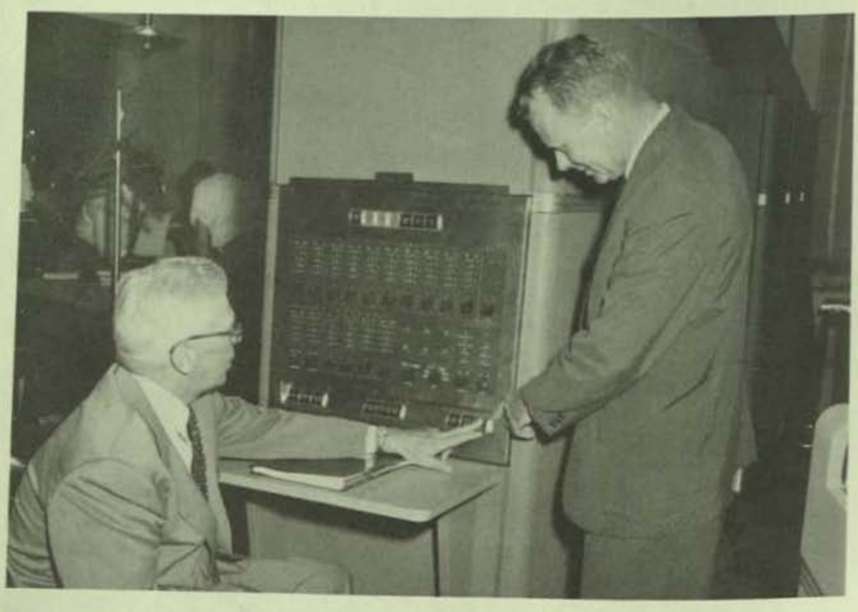
(Left) Delores "Dee" Blickensderfer — First Data Processing Secretary — 1955 (1990 picture).



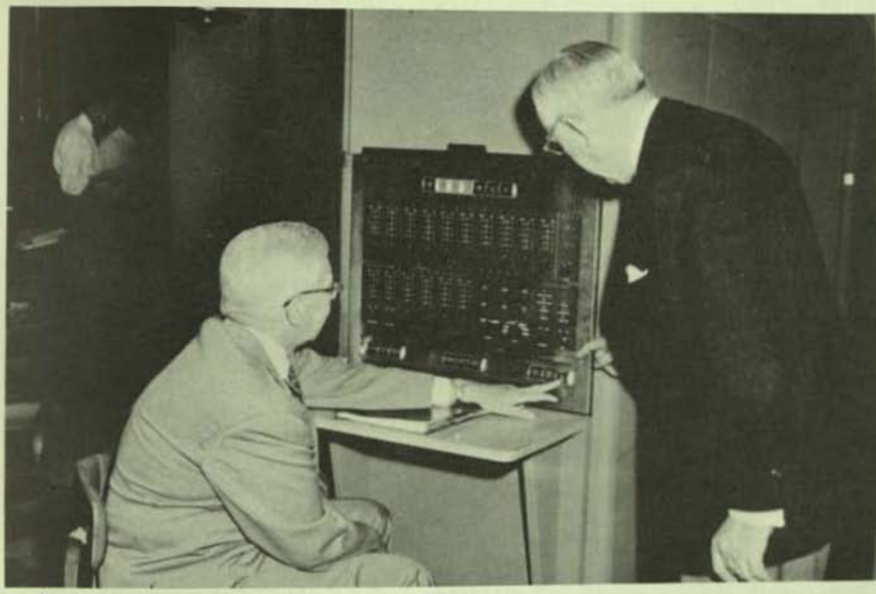
(Left) Frank Warber, Vice President — Electronics Research (State Farm Life Insurance Co.)

(Right) Henry Allen, Senior Electronics Systems Analyst (State Farm Life Insurance Co.)

IBM 650 System — First Electronic Computer used by State Farm Mutual — 1956.



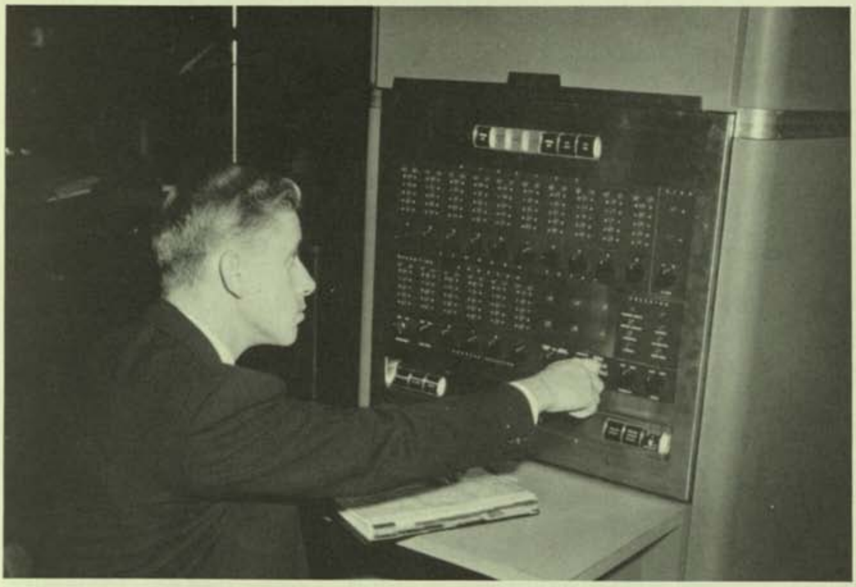
A. H. Rust & C. A. Marquardt with first 650 System — 1955.



A. H. Rust and G. B. Brown with First 650 System — 1955.

Bob King of IBM with Roger Woodrey and Jim Hickey — First 650 System — 1955.

IBM Plane — IBM & State Farm Executives leave Peoria for meeting with IBM in Poughkeepsie, N.Y. — Sept. 17, 1959. Pictured on steps, left to right: Robert Noel, C.A. Marquardt, G.B. Brown, (unknown), M.G. Willke — all from State Farm. Pictured on ground, left to right: (First two men unknown), A.H. Dierkes from State Farm — Glenn Reitzel, John Maggio, Guy McMillan, Richard Terrent, Sam Chase — all from IBM. The unknowns are believed to be from Caterpillar in Peoria.



John Janes with first 650 System — 1955.

CHAPTER IV

Industry Pioneers

Computer Era II — *"Ahead of the game"*
(1962-1965)

As we look through our data processing "rear view mirror" at Computer Era II at state Farm, we find that as we entered the year 1962 we were so engrossed in our tasks and problems that we did not realize we were entering one the most difficult and crucial data processing eras for State Farm of all the eras described in this book. A bold statement indeed, but as events unfold in this chapter you will find this statement to be overwhelmingly true.

It was a period when technology was changing at a comparative rate never experienced before and possibly never again. I am sure someone reading this statement will say, "Wait a minute, I do not believe that! Look at the enormous changes of the 1980's and 1990's". True. But, I said the "comparative rate" of change, by which I mean that when the technology changes of the 1960's are "compared" to the changes introduced in the 1950's, the rate of change was absolutely staggering! It was analogous to the rate of change which occurred in aviation and space technology. Aviation converted almost over night from propellor to jet-powered planes; and, space technology transformed an earth-bound science to the unbelievable circumvention of the earth and ultimately to the landing on the moon.

Yes, today in the 1990's the overall pace is quicker, the sheer volume of changes is staggering, and many more people are involved but the "comparative rate" of change is slower partly because of the statistically smaller base from which the 1960's emerged. For example, although the technology of the recent gulf war was phenomenal, the war planes were still powered by jet engines similar to those introduced in the early 1960's. Similarly, space exploration also has accelerated with almost "ho-hum" regularity but basically the objectives remain involved in exploration tied to the circumvention of the earth as it was in the early 1960's rather than the much more exotic space exploration envisioned at the end of that decade. Obviously, current budgetary limitations and the lethargic world economy is partially responsible for this.

It is this tremendous rate of change to which those of us involved with data processing were exposed in 1962 and which was the basis for the extraordinary challenge and attendant problems we were to experience. For example, within a matter of a very few months we were faced with the considerable challenge of converting from a punch card technology, where every bit of information was recognizable to the naked eye and could be read or punched at speeds of hundreds of cards per minute, to the magnetic tape and magnetic disk technology, which no longer permitted any recognition by touch or vision and which could be read or written on magnetic tape and disks at the rate of tens of thousands and millions of characters (bytes) per second, respectively. That was the comparative rate of change so tremendous that it caused us and most data processing novices real problems until this new technology was thoroughly understood and conquered. Until we reached that level of expertise, the impact was enormous.

Other changes which were important elements in our data processing environment of that time were the vast increase in the amount of paper that 600 lines-per-minute (and faster) printers could produce; the change from machine-like programming to symbolic languages such as the Autocoder language we used for the 1400 Systems; the considerable change in program testing for magnetic tape and disk systems; and, the introduction of instant inquiry of information and data over in-house teleprocessing lines as compared to the printing of data on slow electric accounting machines, the product of which was then transmitted by mail. The fact that those new technologies were introduced virtually at the same time made their impact enormous not only for those of us designing those new systems but also for those employees handling the products of those systems. Those changes not only meant that information, which had required hours and days for transmission, was now instantly available. Printers which printed a few pages per hour, now printed volumes in a few minutes. Computers which not only could produce enormous good data could also produce horrendous amounts of "garbage".

It was also the "surprises" which we experienced, along with the impact, that reinforced what speed could do but it did not really "hit home" until we saw, for example, dozens of feet of magnetic tape pile up in seconds because of a malfunctioning tape drive or reams of paper stack up in "mounds" because of defective printer or stacker. It was only then that we had a "real feel" for speed—bad as well as good!

Unfortunately, we had our share in 1962 of both types of experiences. Those experiences, which will be the subject of much of this chapter, can best be compared to a ride in a row boat over the dangerous rapids of the Colorado River. Sometimes as "smooth as glass" and at other times as if your boat would tip over into the churning waters.

Today, with the tremendous size and experience of the data processing department, that same encounter would be no more hazardous than the giant Queen Elizabeth riding out a small ocean squall. Fortunately, the most important aspect of that fateful year is that our top management under trying circumstances supported us solidly and completely. Without that support we would have failed miserably. So let us examine why 1962 was such an "historic" year in the long history of data processing in the State Farm Mutual Insurance Company.

Early in February, 1962, as explained in more detail later, we made the decision to aim at October 1 of that year to begin full scale operations of the 1400 System in the Mid-West (Illinois) Office and to use the Iowa Operating Division as our "test division" again as we had for the 650 System six years earlier. (I am sure veteran Iowa employees remembering 1962 do not have the most fond memories of that decision.) This meant that we now knew exactly what date to work toward and it also meant that Iowa Division personnel also knew in a general way what they were to encounter. (However, not precisely!)

This decision meant that we had to increase our staff from the "meager" number of eleven individuals with which we began the year in our E. D. P. Research Section of the Planning & Research Department. It meant that this staff had to complete the design and written instructions of this new system for the Iowa Underwriting, Service, and Claims personnel who would be responsible for the input of transactions and the handling of the output in terms of many new policyholder, agent, and claims forms that this system would produce. It meant that the programmers would be working all day and many, many nights and week-ends in order to achieve this October deadline with a set of dozens of programs which had to work flawlessly. It meant in addition to the finalization of the computer programs and the testing of those programs, those of us in the "EDP Research" Section would also be required to write the computer operating instructions for each of the programs written for both the 1401 and 1410 Systems. Finally, it meant that we had to begin the task of completing the instructions for and training the Iowa Division Underwriting, Service, Claims, Accounting and Data Processing personnel in accordance with our revised schedule in order for us to achieve our goal of a successful Iowa test to begin in October.

In order to place this entire task into its proper perspective, Roger Woodrey, one of the four of us who initiated the EDP Research Unit in 1955, remembered that the new system required rewriting the job description for every "operations" job in the Iowa Operating Division, and the Midwest Office Accounting and Data Processing Departments. A technological impact report prepared by State Farm reported that 90% of the company's functions were affected by the 1400 computer system.[53] The March 2, 1962 ALFI NEWS (State Farm's own newspaper) stated "Changing a computer system in a multi-million dollar, decentralized corporation isn't like changing the furniture arrangement in your living room. It takes time and great attention to an almost unbelievable amount of planning." I believe these statements reinforce my contention that the implementation of the 1400 System at State Farm represented a change of such magnitude that it was not only the most comprehensive to that date but perhaps one that will never occur again, especially not over such a limited time frame.

1400 System Goals Established

In the previous chapter we revealed that the two major forces moving us to the new 1400 System was the prospect of fulfilling the long-standing goal of eliminating the x-cards and the promise of the new technology of the IBM 1400 Series computers of making that dream a reality. We will identify, therefore, the principal computer programs we had written and implemented which enabled us to reach that objective in addition to many more which resulted in a first giant step toward a paperless modus operandi (even today not totally achieved) and an extremely successful data processing system considering the era in which we were working.

The general system goals we had established and which we hoped to have operational within nine months[52], were:

1. A system flexible enough that it could meet the needs of our decentralized corporate philosophy—capable of meeting the needs of our largest office, the Midwest Office, and yet able to service our smallest offices efficiently.
2. A system that would for the first time incorporate policy and claims integrated files into policy and claims master data bases. (The initial effort toward a concept that is currently accepted as and used as an absolute requirement.)
3. A system that would reduce the work load of all operational functions of any and all regional offices, especially for the operating divisions, accounting, and ancillary departments. This included computer-prepared forms previously typed or even handwritten, which could now be economically prepared by the 1401 computer.
4. A system which could be easily changed via a new programming language known as Autocoder. It was our first experience in the use of a higher-level-type of programming language. (Compared to current programming techniques, it was somewhat primitive.) Autocoder was similar to an assembler type language except that it used a symbolic coding scheme rather than precise numeric operations codes and memory locations. (The significant difference is that with the assembler type language, the programmer had to keep precise records regarding previously used and unused memory storage locations, and similar "bookkeeping" chores with infinite accuracy whereas with higher level languages these chores are performed automatically by the computer.) Other languages available for the 1400 Series computers were COBOL and RPG, Report Program Generator, for programming reports that were

designed to be printed on the 1401 computer. We chose to use Autocoder exclusively since it was very easy to learn, gave us more precision, and fit our needs very well.

5. A system which would be for the first time magnetic-tape and random-disk oriented which would reduce punch card operations drastically and thereby increase data processing storage capacity and processing efficiency enormously.

6. A system that would reduce duplicate clerical data entry and duplicate key punching via the capability of re-working initial input data into many different forms electronically thereby eliminating the entry of some types of information more than once. For the first time, information entered into the system as raw data could be used over and over requiring merely computerized manipulation to meet other special requirements.

7. A system which, for the first time, could handle mass mailings and massive changes in the policy or claims master records entirely via specially written computer programs. This included special mass conversions of the master tape records in response to directives from corporate management or state insurance departments.

8. A system which also for the first time could maintain its own pending system automatically and via this pending system could produce on the appropriate date the forms required such as an entire day of renewal billings or cancellations which had been pended, without human intervention unless desired.

9. A system which would process limited claims functions including most "fast track" claims and other limited claims processing almost entirely via computer programs with minimal human intervention.[53] (Although many of the processes listed above were "firsts" within State Farm, this feature was the first computerized claims handling procedure used anywhere in the industry.)

10. A system which streamlined renewal payments via a (then) new device known as the Porta-Punch card. The Porta-Punch card was an IBM card similar to the cards used even today in poling booths where the voter uses a stylus to punch holes in the IBM card to register his votes. This device simplified insurance renewal payments drastically since only changes in payment amounts or late payments needed a punch(es) in the payment card and most importantly it triggered the payment process within the computer program with or without any indication of change. Its most important feature and advantage was its ease in making changes in the insured's classification or if as a result of a late payment, there was a period when the insurance was "time out of force". All of these conditions could now be triggered without the time consum-

ing process of punching an entire IBM punch card on a regular Key Punch Machine.

11. Finally and possibly most importantly, a system which embodied all of the proven data processing enhancements which had been recently devised including the ability to inquire instantaneously into the Random Access Storage Files, known as Ramac. This system enhancement was the forerunner of today's "real time" capabilities of on-line processing which are universally in use.

This array of goals was indeed a massive undertaking requiring the capacity of a combination of two computers in each regional office—the 1401 and 1410 computers which made up the 1400 System.

Let us now look somewhat deeper into the configurations and capabilities of these computers and how we used them to achieve the goals enumerated above. The 1401 computer was the smaller computer programmed to be the input and output device for the dual computer system whereas the 1410 computer was the larger "workhorse" which maintained the policy and claims master tape and Ramac (Random Access Memory Accounting Machine) records and did most of the "heavy" processing of the work from input information as previously recorded on tape by the 1401 computer.

The 1401 computer system was an IBM card/magnetic tape system consisting of five IBM Type 729-II tape drives, 12,000 positions (ultimately 16,000) of core memory, a Type 1402 card reader/punch, and a Type 1403 high-speed printer. The reader/punch read IBM cards at 800 cards per minute and punched at the rate of 250 cards per minute. Card reading/punching speeds were considered moderately fast but were increased substantially over the next 10 years; but, then CRT (Cathode Ray Tube) interactive video systems slowly began to make data input via punch cards nearly obsolete. The 1403 printer printed at the "unheard of" speed of 600 lines per minute. Although considered extremely fast in 1962, it was merely the beginning of a series of fantastic increases that were to be introduced during the next decade and decades thereafter.

The IBM 729-II tape drives had a tape transfer speed of 75 inches per second and a tape density of 200 characters per inch. This represented a total tape reading/writing speed of 15,000 characters per second. To such novices as ourselves, those speeds were phenomenal, especially when our background had been IBM card reading speeds of 150 cards per minute. Those speeds actually were slow compared to the speeds already available on tape drives attached to the larger systems of that day, e.g. the IBM 705 computer with tape drive speeds of 112.5 inches per second and a density of 800 characters per inch, which produced a total speed of 90,000 characters per second. These speeds were made available later to 1400 system clients (including State Farm) and were soon to be surpassed during the next decade, especially with the introduction of the new IBM 360 and 370 systems.

The IBM 1410 computer was a much more powerful system built expressly for the purpose of being a compatible "big brother" of the 1401 as explained earlier. It had the same basic characteristics as the 1401 and together they could interchange or exchange information between the tape drives or Ramacs of the two systems (if attached to both systems). The 1410 computer used by State Farm was strictly a magnetic tape and Ramac (magnetic disk) oriented system. Attached were five 729-II tape drives, completely interchangeable with the tape drives on the 1401 computer, and either a Model I or Model II Type 1301 Ramac. (The size of the regional office dictated which model Ramac would be installed in that office.) The "engine" of the 1410 computer was the Type 1411 processing unit. Also, this system included from one to three Type 1014 inquiry stations located in the nearby operating divisions which for the first time enabled hundreds of operating division personnel instantaneous access to policyholder information for claims handling and other purposes.

Technological Impact on State Farm Mutual

In 1962 as we were concentrating on the development and testing of all aspects of the new system, IBM was making great strides in the technology of the tape drives and Ramac disk drives. Although we used the 729 Model II tape drives in 1962, before the last regional office was converted in 1965 the tape drives ordered for our larger offices were upgraded to the faster 729 Model IV and later to Models V and VI. The significance of this was that the speed had moved from 15,000 characters per second to 90,000 characters per second, or six times faster.

During that crucial test year of 1962, the first Type 1301 Ramac disk storage units were capable of storing such immense numbers of characters with retrieval speeds that at that early date literally "boggled the mind". In the 1990's the ability to store millions of characters per second is so common-place that it is significant only to non-technical personnel. In that day, however, such massive storage capabilities and ability to retrieve at such speed were unbelievable, even for the technically minded.

Although it was my "privilege" to program the first inquiry programs utilizing the 1014 inquiry stations which searched the Ramac for instantaneous retrieval of information, I shall describe these systems and their use in the most general terms because they were very intricate and complicated considering the programming language in use. The book "IBM's Early Computers",[31] describes the early Type 1301 Ramac as the: "... 1301 Disk Storage Unit containing two storage modules. Module capacity... in the 1410 context (was) 25 million characters. As many as ten modules (five units) could be attached to a computer system, providing maximal capacity of 250 million characters (for the 1410).

Disks rotated at 1800 rpm with 50 tracks to the inch . . . The 1301 could be ordered . . . with two modules, one mounted above the other on (a) rotating vertical spindle. Each module was served by a comb-like access mechanism that moved twenty-four arms in concert. Each arm had two slider-supported recording heads, one to serve the surface above the arm and one the surface below. Once the comb had positioned, the active head was selected by electronic switching." The rotating disks with 50 concentric tracks per inch on each disk were designed to represent imaginary cylinders from top to bottom through the 25 disks making up each module. Therefore as the arms were moved inward toward the center of the spindle, the twenty four "arms" on the comb-like device could read all 50 tracks (25 disks with one track on top of the disk and one on the bottom) from top to bottom within that imaginary cylinder. The addresses for these disks were organized so that data when stored in the "chosen" sequence, either numeric or alphabetic, within the cylinder, it was possible to read or write consecutive information within this cylinder from the top disk to the bottom disk without moving the disk arm until the next cylinder was addressed. This concept, when loading or unloading information within the addressed sequence, reduced arm movement to a minimum and thereby increased reading and writing speeds immensely.

It may seem strange today to learn that in that era when we had little experience in the installation of a system as complex as the 1400 System promised to be, one of our major concerns was to get our orders for new equipment "on line" as quickly as possible. We knew we would eventually need at least 14 of the Type 1301 Ramac Disk Units for our countrywide implementation. Therefore, for us to get on IBM's list of "first day orders", marketing manager Mel Deener remembers that Guy McMillan and Deener of IBM met with Marquardt, Dierkes, and Willke at 5 PM, Central Time, of the evening when IBM was scheduled at 6 PM, Eastern Time, after business hours, to announce the new "hot" 1301 Ramac Disks. McMillan and Deener took that order that night to Chicago and even with that effort we were only within the 30th order accepted by IBM that day. We did get the systems when needed.

Ultimately, many of the larger offices were equipped with the IBM 1302 Disk Storage Units which had four times the capacity of the 1301 drives. (In October 1962, IBM announced another notable disk drive innovation, the Type 1311 Disk Storage Drive which had been credited as having "augured the end of the punched-card machine era",[31] according to the book, "IBM's Early Computers". It was a few years later when State Farm Mutual began its use of the removable disks.)

IBM 1014 Inquiry Station

The IBM 1014 Inquiry Station was the most unique, at that time, of the many technological advances which State Farm introduced with its new

1400 System. It was actually the 1014 typewriter type inquiry station along with the Ramac Units from which it drew its policy and claim information instantaneously which enabled the State Farm Agency magazine, the Reflector,[54] to announce that "With the new tape ramac system State Farm will have the most advanced data processing system of any casualty insurance company." What made the IBM 1014 Inquiry Station so unique at that time?

Mechanically, the 1014 was basically only an IBM Selectric typewriter capable of converting its typed messages into electronic impulses which when interpreted by the 1410 was translated into the search and capture from the appropriate policy magnetic disk records, the information necessary for adjustment of the automobile insurance claim against that record. All of this occurred within a time lapse of two seconds after the clerk making the inquiry had typed merely the state/division of the record, and policy number. The information which automatically was typed by the system on the inquiry form included the description of the vehicle, the coverages in force, a (check point) portion of the name of the insured, the latest time out of force period (if any), and an indicator if information too cumbersome to be included made it necessary to secure the application before the claim could be processed. Obviously, this was not sufficient for the more complex claims but did provide the basics for a high percentage of claims handled.

This information was placed on the Ramac disk records as a by-product of the daily master tape processing runs which updated the policy master tape each day as a result of the daily updating process with the day's transactions. Although that may have been the most unique 1400 system process, many other important processes were performed by this new system which made it such an important venture.

1400 System Processing

We shall now describe those processes in the most general terms to give you only the broad fundamentals of the concepts used in the 1400 System. The overall concept of these various processes, or "runs" as we named them for simplicity, was for data processing operations to begin each day at about 4:00 P.M. when the day's transactions were to be released to the Data Processing Department. Those transactions were processed first through the 1401 for purposes of editing, sorting, and magnetic tape preparation for a series of subsequent processing runs on the 1410. The 1410 runs were the "heart" of the 1400 System and included the "heavy" tasks of managing the master tape and Ramac records, handling the 1014 inquiries, rating the policies for issuance and billing, and file manipulation for such items as pending files, past due items, etc. The resulting tape records from the 1410 computer runs were then returned to the 1401 for printing of numerous forms, billings, policy printing, etc. In addition, subsequent levels of processing were then initiated on both computers to reach the ultimate goals of the preparation of many accounting, statistical, agency, and management reports.

Since these "runs" were fundamental to the 1400 System, a somewhat more detailed explanation of these major programs is in order. The first computer program or "run" performed daily on each day's transactions as they were received was Run 1 on the 1401 computer. The daily transactions were edited, sorted, assigned a sequence number, and written on another magnetic tape as an input tape for the next set of operations to be performed on the 1410 computer.

The next run, Run 2, known as the Master Tape Run, processed on the 1410, matched the current day's transaction records from Run 1 as well as yesterday's updated master records resulting in a current updated Master Tape and a new reel of tape records reflecting the current day's transactions needed for the subsequent processing by Run 3 on the 1410 computer. The Master Tape Run also updated the disk records on the 1301 Ramac as it was updating the Master Tape with yesterday's transactions, thereby keeping the Ramac records up-to-date for inquiry purposes via the 1014 Inquiry Stations.

Run 3, known as the Coding Review Run, performed the important task of reviewing the status of the agent code numbers of the local agent and the then titled "district agent" listed on each policy master tape record. On those days when new agency assignments were received from the Agency Department, those code changes were incorporated into a table within the Run 3 programs. As the current day's transactions were processed, the agents' coding on the policy production records were revised accordingly and a new production records' tape written for the next 1410 program, Run 5. (By the time that these programs had been completed, the elements of Run 4 had been incorporated into Run 3.)

Run 5 was an a very large and important program which calculated the insurance rates for each policy transaction, requiring such rating, for that day's transactions. Because of the many rating factors, and in some regional offices a number of states with many different rating factors and requirements, Run 5 utilized the Ramac disk storage for the immense amount of information required to meet those many and varied requirements. This was a good example where, for the very first time, the magnetic disk storage units were used efficiently and extensively for program storage as well as for its primary purpose of storing policy records for inquiry purposes as explained earlier. The output from Run 5 was a set of tapes updated with "rated" policy production records to be used next by Run 6.

The elements of Run 6 dealt with perhaps the most important program of the many programs composing the entire 1400 System. Run 6 included programming for such significant insurance transactions as the reclassification of the insured and/or his vehicle; automatic billing of renewals; clearing of suspense debit or credit items; handling of

"Balance Due" items including controls for the printing of the balance due reminder notices and the setting of pending dates if further action was required; and, writing the resulting master tape records and production tape records which incorporated all of those significant processes. Other many lesser functions also were included within this program.

It should be obvious from the above-listed processes handled by this program why we had an extraordinary series of almost never-ending problems with this program. Although Roger Woodrey initially helped write this program, it was Don Arndt who ultimately was responsible for it and "fought" those problems to the "bitter" end and conquered them—to his eternal credit! (More will be said about this really heroic effort by Arndt and the *entire* EDP Research staff, especially as we placed the 1400 System on-line in a production status for the first time in October, 1962.)

The output of Run 6 became the input for the claims processing run, Run 6A. This run was the first program in the industry dealing with automatic handling of special types of claims processes including payments of such claims referred to by State Farm as Fast Track Claims. This program also matched policy and claims information for further claims processing, the results of which were printed out on special claims forms for ultimate handling by office claims representatives. Much more was done in this program which was far too detailed and not appropriate for further discussion in this book.

The output from Run 6A represented records on tapes which were in policy number order as established initially by the Master Tape Run, Run 2. It was now necessary to process those various tape records through another rather complicated program, Run 8. Run 8 (initial Run 7 was incorporated into Run 8) essentially performed the tasks of record balancing and established tapes which were to be used for different purposes. These tapes had to be "internally" sorted to match different pre-set sequences including the initial sequence established by Run 1 in the order of the original daily transactions as received from the operating divisions. The pre-set sequence was necessary for the subsequent 1401 printing runs so that resulting printed forms and reports would be in the same sequence as the files held in the operating divisions, which later had to be matched with those printed forms and reports.

The tapes, which had been produced on Run 8, were transported to the 1401 at which time it began performing as the "primary" system rather than as a "slave" for the 1410. Some 30 forms were printed on the 1401 as well as many other programs for the accounting, statistical, agency, and management reports, as mentioned earlier. Among those many 1401 programs were additional claims processing runs and miscellaneous printing runs.

The many printed forms and reports were then distributed to the operating divisions and general departments for ultimate disposition.

Programming and Testing the 1400 System

Those programs were the result of some very intelligent program design, intensive programming effort, and extremely long hours of program testing, programmer and user training, and system implementation by the following individuals:

Program	Computer	Programmer	Program Objective
Run 1	1401	Roger Woodrey	Formulate Input Tapes
Run 2	1410	Myron Willke	Formulate Master Records
Run 3	1410	Ed Doebbling	Agency Code Review
Run 5	1410	Roger Woodrey	Calculating Premiums
Run 6	1410	Don Arndt	Insurance Processing
Run 6A	1410	Ken Reeser	Claims Processing
Run 8	1410	Myron Willke	Formulate Print Tapes

Doebbling is currently in Mountain States Office. Arndt resigned in the early 1960's for personal reasons. Reeser, Woodrey & Willke remained basically with the DP Department.

1401 Programs	Programmer	Program Objective
Claims Runs.........	Ken Reeser	Claims Printing
Accounting Runs.....	John Janes Roger Gerjets	Financial Reports
Agency Runs........	Charles Cappis	Agents Experience & Compensation
Statistical & Management Runs	Richard Caines Al Wolff	Statistical Summaries & Management Reports
Printing Runs	Jim Jones Stuart Warrington	Policy & Forms Printing

Gerjets was borrowed from the Midwest Office—later joined the DP Department as a permanent employee.

Wolff resigned in the early 1960's to join the Jet Propulsion Laboratory in Huntsville, Alabama.

Jones was borrowed from Missouri/Kansas Office—later joined the DP Department as a permanent employee.

Warrington resigned in the early 1960's to assume another DP position and ultimately started his own business.[153] He is the founder and CEO of Strategic Data Systems, Sheboygan, Wisconsin. "Stu", as Warrington was known in the 1960's, is best remembered for his automatic response to every printing problem brought to his attention: "I just print what they give me!" Under those stressful conditions at that time, it was hilarious and broke the tension.

All of the others remained with the DP Department.

Miscellaneous Data Processing Programs

One of the most important tasks was performed by Richard Andes and James Weikel when they provided support and liaison between the operating division personnel and the programming staff. This task included meeting with the Iowa division personnel daily about program problems, system requirements, production entry problems, printing problems and similar tasks. These liaison tasks were sometimes "very difficult" for everyone but absolutely necessary. Andes had been with EDP Research for some time but Weikel joined the department in December 1962.

During the year prior to October 1, 1962, Andes and Roger Gerjets programmed the card-to-tape conversion runs and did limited programming of miscellaneous programs.

Finally, I would be remiss without mentioning the extraordinary effort on the part of three IBM technicians who programmed and worked with us as if they were employed by State Farm, namely, Ken Anderson, Jim Sepich, and Lee Penny. Often they would make emergency trips to IBM test centers and other locations performing tasks while representing IBM as a technician while also representing State Farm as a programmer. Their hours often were equally as long and late as were those of us in EDP Research.

It should be noted that many have asked how so much could have been accomplished with so few people under very difficult conditions as explained within the next few pages. This was possible because of an extremely dedicated and experienced team. One of the most crucial aspects was that nearly everyone on this team had *years* of insurance experience before joining EDP Research which was possible because in that era that was the standard method for advancement and because of the relatively few needed in that capacity, we could be quite selective. We were able to place in those crucial roles exactly the same type of employee described so appropriately in an agency Reflector article published in 1990 in which Executive Vice President, Vincent Trosino, expressed that the crucial need to meet the demanding current pressures of the market place was reverting back to the former practice of training new employees about insurance and the very infrastructure of the insurance business before placing them into the various jobs to which they will eventually gravitate. It is exactly that practice during that period that enabled us to design, program, and implement the 1400 System so successfully despite our problems in an extraordinary pioneering environment. Those 1400 System computer programs designed, written and tested by the twelve State Farm and three IBM individuals were so important to the data processing effort and to State Farm in general that the events which happened later during the summer and fall of 1962 are legendary.

Preparations for Installation of 1400 System

As we entered 1962, we united our efforts as a well-knit team. We quickly moved into a daily routine of spending much of each day and many hours each night writing, rewriting, and testing the programs for which each of us assumed responsibility. The three IBM technicians worked with us as "equals" including the same long days and many weekends as did those of us from State Farm. Even today, almost thirty years later, those of us who remain attached to State Farm recall those efforts by that "team", including the IBM'ers, with great pride and the satisfaction of accomplishing a tough job with limited resources, not necessarily the fault of any particular group: State Farm management, Data Processing management, nor EDP Research itself.

The initial scheduled objective for installation of the 1400 System in the Iowa Division had been July 1, 1962. However, on February 13, 1962 the unforeseen program problems, difficulties with the preparation of the room within the Data Center, and the overwhelming task of training the many employees needing that training forced us to re-examine the schedule and to decide to delay the implementation date to October 1. This decision was reached as a result of a meeting attended by C. A. Marquardt, Planning & Research Vice President; James Turner,[26] Administrative Services Vice President; Arthur Dierkes, Data Processing Assistant Vice President; and, myself. Marquardt notified the entire company of this schedule revision.

On March 10, 1962, EDP Research issued the initial companywide instructions explaining the many facets of the 1400 System to the operating divisions, and all other involved departments within the Home Office and regional offices—Electronic Data Processing Manual Memorandum #675. Although all of us wrote and published portions of this huge and multi-faceted memorandum, it was the primary responsibility of Andes to publish and upgrade changes of the system within this memorandum, which in reality became a huge manual because of the continual upgrades and revisions. In a special article explaining the use of the two devices used at that time to transmit essential information about the 1400 System, Andes, after consultation with Jim Weikel, wrote:

> "In the early stages of converting to the 1400 System and functioning under it, a need was recognized to communicate changes and corrections on a timely basis to the regional office operating divisions and data processing departments. Two memos were initiated for those purposes.

'Electronic Data Processing (EDP) Memo 479 contained procedures regarding the conversion of records to the new electronic media to be processed under the 1400 System. (This memo was also previously mentioned in Chapter 3.)

Electronic Data Processing (EDP) Memo 675 contained procedures regarding processing work under the 1400 System.'

"These two documents, with their many supplements, became the auto company procedural "bible" for functioning under the 1400 System. They were intended to be temporary repositories of information to keep the regional offices abreast of the many changes and corrections being made. It was expected that in a relatively short time the revisions would be placed in more structured procedural manuals. However, the magnitude of the task of keeping up with the revisions, and maintaining the 1400 System implementation schedule, prevented the limited number of people from doing so. The result was these two procedural memos lasted much longer than had been expected. Since they contained information in random order, the longer they were in use, the more cumbersome they became to use. They were eventually replaced with manuals in a more usable format, but for several years they were the principal regional office auto company operating procedures.

"Many people contributed to these memos, but Jim Weikel collected, published, and coordinated the implementation of the changes in EDP 479 and Dick Andes did the same for EDP 675."

By May 26, 1962 we had made sufficient progress with all the primary programs, including initial tests, that we on that date made the first synthetic coordinated test run of actual Iowa operating division transactions. These tests were dual runs in which we compared our test results with the actual 650 System results, allowing for process changes due to the new system design and capabilities. The test proved that much more work had to be done—an understatement indeed!

Although we had done much work on the 1014 Inquiry Station project in a strictly pioneering mode, because of its absolute uniqueness in the industry and with no previous experience with this type of technology, it was not until August 7, 1962 that we felt confident enough to formally request IBM to install those stations in the Iowa division for the System implementation scheduled for October 1.

1400 System Implementation in Iowa Division

Finally, the fateful day arrived for the beginning of actual computer production runs for the Iowa Division of the Midwest Office. Those of us in EDP Research already were somewhat weary, having worked on "final" preparations the previous day, Sunday September 30, but confident that all would go well as it had many times before in the 650 System days. But alas, that was not to happen! We soon realized before the end of the first day, that October was going to be a difficult period. We did not yet realize immediately, however, that its ultimate destiny would be to become "Black October".

Unfortunately not much good happened that first day and according to my diary, nothing good really happened that first two weeks. In fact by the end of the first week we hardly *knew* what day it was. It was a tremendous shock to our collective egos, especially mine, because I knew the system would work and work well. It also became a great burden for Carl Marquardt, who had the unenviable task of answering some very tough questions as the problems continued to mount. As the leader of this team, they also became quite heavy for me but I had the privilege of the "inside intestinal" knowledge that this system would truly work and work well which eventually proved to be an accurate assessment. Meanwhile, Marquardt, who had supreme confidence in our team and for which I personally will be forever grateful, had a momentary doubt when he asked me if we should consider closing down this Iowa project and move the entire operation to Michigan where we could continue under less "corporate glare" and companywide pressure. My answer reluctantly but instantly was, "Carl, if you do, I will resign here and now because I know this system will work and work well." No more was said about that idea and we proceeded to work out our problems which at that time had really just begun.

The problems initially surfaced as quite small ones giving us confidence that they would soon be conquered. However, as the first "batch" of fifty transactions (which made up a formal batch) was being processed, we found that our first problem was actually in the program which had formulated our Master Policy Records from the stored punch cards, the program known as Run 2C. It required most of that first day to correct that problem and to rerun thousands of IBM cards in order to obtain valid initial master policy records for Iowa. "No problem" we thought, and all would soon be well.

Having solved that problem, we soon found problems in nearly every program as we progressed from program to program day after day. We were also progressing from day to day without any work returning to the Iowa Division which was becoming more concerned as each day passed. This series of problems caused the "official" start date to be delayed day by day. The pressure on all of us was enormous!

The Legendary "Cot"

Whereas the initial problem had been in the Master Tape formulation, the problems moved from run to run without any program being completely "ignored" including my own Run 2! Inasmuch as problems existed in nearly all programs and all of our program staff worked night and day, by the week-end of October 6th and 7th, my wife Freda came in to see for herself why I was rarely home—merely to change clothes, and a few other essentials. It was she who suggested that we bring a *cot* into the computer room so that we could take turns resting (or sleeping) on the cot instead of on top of desks and files. This cot was then used any time during the day or night by nearly everyone on the team. During the worst five or six days of this period, we hardly knew night from day anyway because the computer area was without windows. The use of this cot soon became legendary in the annals of State Farm's data processing history and even in the annals of State Farm as a company. (It is absolutely a miracle that someone did not develop a serious health condition, such as a heart condition or worse, because of those impossible hours which were spent at times as an absolute necessity and at other times at one's own discretion. It was at this time that my personal physician ordered me to begin a regimen of serious exercises to relieve a stress problem. I began running a mile or more every day whenever I could, which I have continued to pursue to this day. Each of us were very fortunate, yet we saw it through to a successful conclusion.)

Soon we began to see top executives wander through the area, especially after the word about the cot filtered to Corporate Management's 12th floor. I must give full and unbounded credit to our top management for their reaction. Among those visiting us and giving us their unrelenting support at that time were Edward Rust, Sr., President; Richard Stockton, Vice President and Treasurer; and, Robert Noel, Operations Vice President. Marquardt had been briefing them daily on the progress (or lack thereof) of our project. Nevertheless, they stood firmly, and calmly behind us and without that support eventually we would have had to abandon this effort with a disastrous ending because the Iowa Division had thousands of files in various degrees of completion. To try to reconstruct this situation without supporting the 1400 System to a successful completion would have been utterly unthinkable.

Earlier I mentioned that Run 6, an extremely complex program being tested by Don Arndt, gave us the greatest problems—although all programs had some problems. On Saturday October 6th, Stockton walked into the Data Center to give us encouragement when everyone had momentarily left the room for lunch because it *appeared* all was going well. I volunteered to remain on watch until the "team" returned. Within a few minutes after Stockton's arrival, as seemingly always happens, Run 6 stopped. Now what? I had not programmed Run 6. I was not about to let Stockton know that I knew very little about this program. I also wanted to keep his support. Luckily, knowing a great deal about all of the 1400 System programs in general, I "manipulated" Run 6 sufficiently and was fortunate enough to "get around" that problem and get the program re-started. Whew! Another disaster averted. (Years later, when all was going well, I reminded him of this incident about which we both had a good laugh.) But the essential point was that Stockton came in a number of times, as did Rust and Noel, week-ends included, not only to see what was going on, but most importantly, to give his support at a very crucial time.

As the days rolled on, we found that not all of the problems were program oriented. With a "total" system overhaul of this magnitude we had to expect manual data entry errors, which we did in abundance, and which with our own program errors further complicated our situation. Much credit must also go to the Iowa Division, especially the Underwriting and Service Sections. I remember the steadfast support, despite those difficulties, which we received from Clark Brubaker, Iowa Manager; James Danahay, Service Superintendent; Harold Covey, Underwriting Superintendent; George Benedict, Claims Superintendent, and the hard working staffs reporting to them. We will always be grateful for that support.

Richard Andes and James Weikel, liaison members of our EDP Research team, spent days and nights working with the division personnel sorting through their problems of data entry as well as the many headaches we gave them by the delays in getting workable returns (and late) from our computers. By the time we eventually "cured" our problems a small conference room was nearly filled with application and claim files requiring rework, correspondence to agents or policyholders explaining our efforts to service them as soon as possible, and other "ugly" situations. In fact, being responsible for this "mess", I was glad that Andes and Weikel could act as a buffer with the Iowa Division personnel because they had to "face up" to those problems every day as the rest of us wrestled with them in the Data Center. In order to lend support to Andes and Weikel, I also spent some time with Brubaker, Danahay, and Covey discussing the situation and trying to determine what we could do in the short run to alleviate those problems.

Good Things Began to Happen

Finally, after those problems had peaked, good things began to happen on the 11th day when the first batch of work was released to the Iowa Division. Many on the team felt a sigh of relief thinking perhaps the burden was about to lift off their shoulders—especially Roger Woodrey who spent a few very late nights with me alone discussing how we could get this "monster" back on track. But, like so many false starts, what had been released was still riddled with inaccuracies. Unfortunately, the further we traveled through the various runs, the longer the next attempt (rerun) would require and the more problems we had laid at the doorstep of the Iowa Division. We were now compounding our problem to the degree that special programs had to be written to correct special problems in certain magnetic tape records such as payments incorrectly entered. But, let me emphasize, some but very few of those results reached the policyholders because of the extreme care and vigilance of our own programming staff and the careful checking by the individuals working for Danahay and Covey in the Iowa Division. Thank goodness for those tremendously dedicated State Farm employees!

Finally, we achieved our goal of a "good" product when the crucial printing runs at about 2:30 AM in the morning of October 17, 1962 proved to be acceptably accurate. Everyone on this team had anticipated this result and therefore all or nearly all of our team, including IBM'ers, were huddled around the 1401 System when the most crucial runs proved to be accurate. Those present applauded, followed by the timely observation by Guy McMillan, IBM Account Manager, also in attendance at that late hour, when he said, "Now I know how my wife felt when she had our first baby." Yes, that summed it up for all of us on that fateful morning.

From that historic hour, things slowly improved and soon we were beginning to get back to a little more normal routine. However, it still required a couple of weeks before we had moved beyond any more crisis situations. By Sunday, October 28th, events had reached enough tranquility that I again could attend church, the inability of which I did not take lightly then nor do I take lightly even today.

During the month of November, the entire EDP Research staff had to continue working under some day and night situations to eliminate problems still surfacing but at a markedly decreasing rate. Meanwhile, the Iowa Division personnel were slowly coming out from under the heavy "paper burden" brought on by those fateful October and early November daily releases. My diary confirms that on November 27th, the Tuesday before Thanksgiving Day, "For the first time the entire EDP Research personnel can begin to breathe easier as divisional personnel in Iowa are beginning to see the end of the most serious, immediate problems . . . "

Before we move on to 1963, it is appropriate to examine in some depth the circumstances which allowed the "Black October" to occur and to reveal other events which happened in 1962 while we were engrossed with our problems.

Over the years well-meaning individuals have asked why "Black October" happened and why it was not avoided (with some implication that it probably should not have occurred.)

The answer may be an expected but unequivocal, "No it could not have been avoided when considering the economic environment of that era and the fact that we were pioneering a very technically complex "vehicle" on "spongy" ground never tread before within any corporation as large as State Farm." Part of the problem was of our own doing because of the very successful 650 System which had been designed, programmed, and installed with a mere handful of (about six) individuals. If so few could install a new system only six years earlier, why couldn't fifteen do the same job in 1962? Why not?

Those of us designing the system thought not only that we could but that we also should! We "felt" that management would not approve "wholesale" increases in our budget when that had never been required in the short history of our data processing existence at State Farm. Remember management also had not had the experience of knowing just how much of a financial benefit would accrue from such a large data processing expenditure. It had to rely on the judgment of the technical staff that the savings would be there. We, the technical staff, in turn had to hold costs to a minimum to be absolutely sure that the financial benefits would "be there" after those large up-front expenditures had been made and this enormous system had become entrenched throughout the regional offices. We actually had only three choices: over-staff, which was unthinkable at that time; staff appropriately, which we thought we had done; or, under-staff, which unfortunately is what we did as we held the staff numbers to an absolute minimum.

But another very important reason as to why we were understaffed, the real reason for our problems, was that we were pioneering a system which was actually a "monster", but we did not know it until it was virtually too late. We did not know it because we were treading such new ground that the many potential "potholes" in front of us were so subtle, numerous, varied, and deceptive; and, with no previous experience with something this complex, they were invisible to us. Roger Woodrey reminded me that in addition to the fact that we had no footsteps to follow, we had to provide for a whole new set of potential codes never used before and for programming that could handle coding irregularities which we could not possibly anticipate.

That is why it happened to us in 1962 and why under the same circumstances it would happen to anyone during that period of our history. Nevertheless, it is my opinion that out of this came a much better, stronger, more confident and experienced corporate management and data processing staff that has made the entire State Farm organization much stronger and wiser—benefits which we reaped for many years thereafter.

Apparently, others involved at that time have similar opinions about their experiences. I have been given written quotations of the positive feelings several of those individuals still "hold" about those experiences more than twenty five years later. Although given to me freely, I will not identify the individuals responsible for those quotations; but, they are available for identification if questioned. Samples of those quotations are:

1. "I am glad I was a part of this era—I am glad I did not miss it!"
2. "The introduction of electronic data processing at State Farm was extremely challenging. Participating in an operation which had

such profound short and long range implications of the way we do business was a very demanding but also very satisfying experience."

3. "Memories that stand out most in my mind regarding the introduction of electronic data processing in State Farm are:

   A. The creativeness involved in designing the whole process.

   B. The dedication and commitment of the people involved in the development and implementation of the electronic equipment.

   C. The willingness of State Farm Management to see it through.

   D. The resilience of the operating division people to absorb and adapt to the conversion and the new DP system requirements."

4. "This was my most exciting period at State Farm. We were pioneers and although it was a tough time, I am glad I was part of it."

Others have offered similar comments, but I believe that these provide substantiation for the great feeling of teamwork and great pride on the part of that team in the accomplishments and groundwork that was laid toward what data processing at State Farm eventually achieved and the high standing it has today.

Other Events in 1962

Now let us return to early 1962 and mention other important events which transpired within State Farm which were largely overlooked by those of us working hard to get the 1400 System operational. These are some of the important events of 1962 which had been recorded in my diary along with other items featured by the ALFI NEWS:

1. On June 8, 1962, A. H. Rust, Chairman of the Board celebrated his 40th year with the State Farm organization.[56]

2. In the June 22, 1962 issue, it was announced that State Farm Mutual had surpassed 7 million automobile policies in force and moving rapidly toward 8 million in force. Also a new mark of 29,393 new business applications plus 11,454 renewal applications had been received for the week ending June 8, 1962.

3. On July 19, 1962, at IBM's suggestion, we revised our 1400 System Ramac orders to substitute the more powerful Type 1301 Ramac for the Type 1405 Ramacs then on order. The Type 1301 was faster and had more storage capability. The even more powerful Type 1302 Ramac eventually replaced the Type 1301 Ramac.

4. On September 17, 1962, Planning & Research had exhausted its space on the fifth floor-south of the old Home Office Building, now the Fire Building. To remedy this condition, the entire department,

including EDP Research, moved to the ninth floor-south. I was assigned my first office which was located on the west wall next to the south elevators. Unfortunately, some of the units still were lacking sufficient space which we corrected immediately.

5. On December 11, 1962, we interviewed and hired William Woodhouse and Thomas Rettig. Woodhouse was hired from our Texas Regional Office. Interestingly, he was a world class sprinter who had, only a short time before his association with us, been a member of a 400 meter relay team that had tied the world record of that day. Within a year or two he resigned to become a State Farm agent in Texas. Rettig was hired from our Northwest Regional Office and is currently still in the D. P. Department.[150]

6. On December 18, 1962, after a serious illness and operation, Comptroller Gilbert "G. B." Brown died. As discussed earlier, Brown was one of the important executives behind the establishment of data processing in State Farm Mutual.

As we entered 1963, we realized with the unexpected problems encountered with the Iowa installation, it would be necessary to delay any further expansion of the 1400 System until every known and future yet unknown problem had been solved. It would be foolhardy to attempt expansion into other regional offices beyond the Midwest Office. Together with Marquardt, we decided to revise the 1400 System implementation date for every regional office.

The most important part of that decision was that we would not make any additional installations in any operating division or regional office until August 1, 1963—a seven month delay—when the Iowa Division was scheduled to be re-located within the West Central Office, Lincoln, Nebraska. This was important because it meant that the IBM card-to-tape process had to be re-scheduled in every regional office to coincide with this new schedule. The result was that not only would the Iowa 1400 System processing be transferred to the West Central Office as the next step in the extensive task of placing the system into all regional offices, but the current schedules for the tape conversion process and the 1400 System implementation had to be revised for the entire company.

After re-scheduling Iowa for transfer to West Central, the Southern Illinois Division was re-scheduled for implementation as of November 1, 1963 followed by the Northern Illinois and Metro-Illinois divisions jointly for January 2, 1964.

It was obvious that improvements had to be made including more manpower. With the hiring of additional personnel during the year and greater emphasis on refining the system "runs", we completed 1963 keeping religiously to this schedule. Not without problems, however, which required still more long days and nights during those intervening seven months prior to the August transfer of Iowa to the West Central Office. We also contrived sophisticated program refinements such as a change that would in the future "protect" master tape records from destruction caused by "pending code" errors, which turned out to be the most devastating "culprit" causing many of the Run 6 errors, emphasized earlier, during the Iowa implementation.

Inasmuch as we had a somewhat more relaxed atmosphere for the first seven months of 1963, we could concentrate on the "perfection" of the 1400 System as it applied to the Iowa Division. This enabled me to return to my desk on February 8 1963 as Director of EDP Research and not as the programmer of Runs 2 & 8 or on-the-spot director which had kept me virtually fully confined to the Data Center since October 1, 1962. Yes, by now, Freda had retrieved her cot!

While we were improving the 1400 System in preparation for the Iowa move, other important facts about, or events of importance transpiring within, State Farm were:

1. EDP Research was still located on the ninth floor-south of the old Home Office (now Fire Building). Shirley Rankin was still my secretary, but not for long as she was soon married and moved to Wisconsin.
2. Carl Marquardt and his secretary, Bess Dragoo and Clayton Sturgeon and his secretary, Hazel Dalton continued to occupy offices along the south wall of the ninth floor-south with the remaining units of Planning & Research occupying the remainder of the open areas in the south half of that floor. Current employees may not be able to "fathom" a sea of open space without the dividers between units, to say nothing of between employees as exists today in 1991.
3. Robert Deems, who would have an important role in the emerging ascendancy of data processing at State Farm over the next two decades, was named Superintendent-Programming in the Planning & Research Department in early 1963.
4. The April 12, 1963 issue of the ALFI NEWS reported on the field testing of the new Monthly Pay Plan, a new program under which policyholders (for the first time) could pay for their insurance in monthly installments. This testing was scheduled to begin on April 2nd in the Metropolitan Illinois Division. This test was under the direction of Elmo Gentes, previously of Planning & Research, then Superintendent-Monthly Pay Plan reporting to Assistant Vice President Robert Bischoff. (More about this later.)
5. Although State Farm Mutual was still very much committed to the exclusive use of IBM computers, we did "branch off" in the area of computer products used on those computers. We had made our

first break on a test basis in 1961 when we purchased a few reels of magnetic tape from Audio Devices, Inc. During the next two intervening years we made additional non-IBM tape purchases and began to look seriously at other manufacturers of small equipment, printers, and printer ribbons—which meant that for the first time a serious "crack" was being opened in the periphery market for not only State Farm but other companies as well.

Among these quite small "diversions" at State Farm were the first purchases of magnetic tape in some appreciable quantities from Memorex Corporation and printer tapes from Olivetti Corporation. It was not, however, until late in the decade of the 1960's that this became an important purchasing philosophy.

6. We had visitors from Mexico for the first time in our data processing history. Much like visitors from other countries, they had heard of our pioneering effort. We were delighted to explain our system to Mr. Miguel Gomez Delvalle, Assistant Vice President, Commercial Insurance Co., Mexico City, Mexico and his fellow visitors.

7. We were continuing to received requests from European insurance companies for the privilege of visiting our department for the purpose of learning more about our 1400 System. Although these requests represented only the beginning, one of those early visitors was a visitor from the Netherlands on October 31, 1963, Dr. Dirk J. Henstra, manager of the Systems Engineering and Planning Department of Nationale-Nederlanden N.V. insurance companies.[56] Dr. Henstra was on a seven-week study of USA insurance companies of which State Farm was one of the first visited.

8. On November 22, 1963 at 12:31 P.M., the nation endured an extraordinary catastrophe with the assassination of the 35th President of the United States, John F. Kennedy, by Lee Harvey Oswald in Dallas, Texas. Only a very few events has held the nation's attention and quest for additional information during the ensuing decades as has this tragedy.

State Farm Introduces Monthly Pay Plan[64]

While those events enumerated above were transpiring and we were quite busy installing the 1400 System, one of our former colleagues, Elmo Gentes, was asked, on a half-time basis, to assist with a new research project pertaining to a new type of premium payment plan—the Monthly Pay Plan.

During 1962 a committee appointed by the President's Office made a decision that research should be conducted to determine if State Farm should offer its policyholders an additional type of premium payment plan. Robert Bischoff was given this assignment with Gentes assigned on a part-time basis to assist Bischoff

After a couple of plans had been proposed, approval was given to conduct a "pilot" operation of this plan in the Metro-Chicago area.

Basically, the plan gave a policyholder the option to pay the premiums on any policies with a single monthly payment, plus a nominal fee. Gentes informed me, "that the original fee schedule is still in effect" (in 1991).

In October, 1963, as a result of the progress of the pilot operation in Chicago, the decision was reached to introduce the plan to the remaining agents throughout Illinois. In June 1964, Les Glenn was given responsibility of the Illinois operation while Gentes was directed to expand the MPP Plan to the Missouri-Kansas Regional Office, making it available for the agency force in the states of Missouri and Kansas.

Subsequently, the plan was approved for expansion into all regional offices except Canada, which introduced a similar plan many years later. The name in recent years has been changed from Monthly Pay Plan to "State Farm Payment Plan" reflecting the expansion to other payment options beyond the original monthly payment concept. (Inasmuch as no additional reference will be made of this plan within this book, it may be of interest to know that as of September, 1990, this plan had grown enormously to 5,909,154 accounts involved with over 10 million policies.)

The Process of Hiring New Employees

Although it was obvious we needed a few more employees during the installation of the 1400 System, the hiring process was quite leisurely in the early 1960's, especially when compared to the tremendous influx of new employees in the later decades of the 1980's and early 1990's. That just did not happen, nor was it required, in the Planning & Research Department of that era. We did bring in a few individuals as I have explained, but certainly not enough as the events of "Black October" would certify. The process of hiring began slowly in those years and gradually accelerated into the major activity it became beginning with the 1970's.

The hiring of new employees in the early years of the 1960's was but a "trickle". In fact, the employees that were hired were hired primarily by me as Director of EDP Research with the extraordinary help of the Home Office Personnel Department. We hired only to "fill in" and occasionally to increase the total slowly one by one. (As we entered Computer Era III, described in Chapter V, that process became an avalanche.)

During that era, our hiring practices were still in the mold of hiring mainly from within the company, largely on the basis of reviewing personnel records which described the education, positions, etc. of individuals working either in the Home Office or in one of the eighteen regional offices in existence at that time. Personnel Departments throughout the company had been giving "aptitude" tests of one kind or another for years, which were of considerable benefit in our initial inquiry about the potential of such possible applicants. The result was a fine group of employees who were intelligent, hard working, and who had a terrific "work ethic". We were beginning to build the foundation of a successful EDP Research organization.

Successful Completion of 1400 System Implementation

After the successful transfer of Iowa Division on August 12, 1963 to its new home in Lincoln, Nebraska, the three Illinois divisions—Metro-Illinois, Northern, and Southern—were implemented successfully without incident. We were now ready to "tackle" the enormous task of completing the remaining regional 1400 System installations.

As we entered 1964, we had to be in "high gear" because we were beginning a very strenuous two-year period of successive regional implementations which resulted in the introduction of the system into six regional offices by mid-1964 and more than half of the twenty regional offices existing at year-end. However, Canada never did install the entire 1400 System but did install a card-oriented 1401 in 1964—a small system on which automatic policy rating could be performed as the primary capability of the system. With the dedication of the Seaboard Office in July, 1965, it became our 21st regional office; however, on September 3, 1965, the Mountain States Office was awarded the dubious honor of being the 21th and last regional office to install the 1400 system.

As might be expected but does not always happen, the installation in the Mountain States Office was very smooth for which not only the Mountain States Office but the many preceding it must be given credit. An information network had been established among many of the regional Data Processing Managers which helped substantially in the latter installations. In addition, EDP Research had learned an enormous amount about the possible problem areas and was able to avoid some of the mistakes made in previous installations. As often happens, by the time the last system was installed, it had been fine tuned to the degree of near flawlessness.

This accomplishment required a very tight schedule with overlapping processes of card conversion followed by full system implementation in a number of operating divisions simultaneously in any given office, interwoven with a nationwide schedule of implementing an average of one office per month (sometimes two), created an environment that required enormous planning and a great amount of travel for many Home Office and regional office employees. This implementation plan required precise scheduling of regional office data processing trainees coming to the Home Office for training coordinated with a likewise "invasion" of EDP Research and other Planning & Research personnel, sometimes coincidentally, going to the regional offices for instructional and implementation purposes. Because of limited resources in the regional offices' data processing departments and the very limited EDP Research staff, with help from others in Planning & Research, we had to be sure that all of this effort was perfectly synchronized to avoid possible serious conflicts. One of the most devastating conflicts could have occurred if regional trainees were en route to the Home Office while the Home Office trainers were en route simultaneously to that same regional office, and other similar possible fiascos.

This operation required the work of more than two hundred individuals for the implementation of the system into all regions except Canada. It is impossible to identify all of those individuals participating from the regional offices; but, nearly all employees who were employed in EDP Research and many others from Planning & Research, listed in Chapter V as having been employed as of the end of 1966, were involved in this massive effort.

Reorganization Of EDP Research

During this period we rewarded the effort of those who were most responsible for the ultimate success of the 1400 System installation via a reorganization of EDP Research and appropriate promotions. Among the top promotions awarded in December 1963 were:

Roger Woodrey—Assistant Director, EDP Research
Richard Andes—Superintendent, EDP Research
Don Arndt—Superintendent, EDP Research
John Janes—Superintendent, EDP Research

Under the reorganization scheme, Roger Woodrey and John Janes reported directly to me, while Richard Andes, Don Arndt, and Ken Reeser, already a Superintendent, reported to Roger Woodrey.

By the end of 1963, in line with this reorganization, EDP Research had grown to a total of twenty two individuals including my secretary, Shirley Rankin. The fifteen analysts reported to superintendents Arndt, Andes, and Reeser, as follows:

Arndt	Andes	Reeser
Ed Doebbeling	(*)William Weigman	Charles Cappis
William Woodhouse	James Weikel	Richard Tarter
Al Wolff	Robert Speirs	Ronald Parido
Dale Sapp	Stuart Warrington	Edward Warrington
Jerry Detloff	Larry Andes	Thomas Rettig

(*) Weigman suddenly became ill at work on November 10, 1964 and eleven days later on November 21, 1964 passed away. This was a very tragic event for our relatively small and "cohesive" staff.

In addition to the fifteen analysts listed above, we were already in the process of hiring additional employees—one each for Arndt and Andes. Departmental growth and new hiring was beginning to "heat up", which has never stopped. The result of an ultimately successful project.

Difficult as this project had been, every department and individual involved was not only happy that this enormous project had been completed but much more mature and confident about whatever the future would bring. We had indeed completed the installation of what we had described at the Insurance Accountants and Statistical Association conference only a few months earlier as the first "Total Information System For State Farm".

The future had already begun before completing the 1400 System installations. As Marquardt had reported in a speech delivered in 1964, the 1400 System was already obsolete. While in the midst of the 1400 System implementation, we were already studying and visiting several computer manufacturers which were researching and marketing new techniques, new technologies, and new computers. We had also begun to introduce some of those new techniques while learning as much as we could about those new technologies being marketed. During that time period, we were deliberately trying to be in the forefront of the use of those technologies.

Introduction of New Technologies to State Farm

Among the many new technologies which we were investigating were the new IBM computers being introduced, especially the new IBM 360 line, the new optical scanning and handwritten scanning devices being researched and introduced, and many other similar technologies.

IBM introduced a new method for its clients to pay for the rental costs of the new as well as old machines. Prior to this time, leased equipment of all types were "rented" on a flat monthly basis regardless of whether it was used ten minutes per day or as much as 24 hours. Obviously because of misuse of this concept, IBM placed meters on all leased equipment with a 20% surcharge for machines metering more than 176 hours per month. (More will be said about the changing methods of charging lease costs in future chapters.)

Marquardt in a memorandum dated June 8, 1964 estimated that this concept would reduce State Farm Mutual's rental payments by "20 to 30%". The use of these time meters remained in existence until the early 1970's when this practice was abandoned.[65] That saving stemmed from more efficient use of the equipment when metered.

It was a rather heady time economically and new research projects seemed to be the "mark of the times". As a result, EDP Research personnel made a number of trips to other companies for purely research purposes as well as hosting a number of meetings and conferences with Home Office and regional office executives interested in our research and ongoing system efforts. In addition, we participated in conferences held by other departments within the Home Office.

The "kickoff" of this type of activity began quite early after the Iowa Division had begun to operate effectively. EDP Research was host to the first of two Zone Team conferences in Bloomington. The data processing departments of the regional offices were divided into six zones among the twenty offices in existence at that time.[54] The first conference was held on January 3, 1964 for Zones 2, 3, and 4 encompassing the East Central, Michigan, Lake Central, South Central, Southern, West Central, Southeastern, Florida, Missouri-Kansas, North Central, and Illinois Offices. That three day conference discussed the 1400 System as well as the new technologies that would probably be next in line for the attention of the data processing superintendents. We were already laying out the broad outlines of computerized zones, and the potential of a nationwide teleprocessing system which did become realities within a few years. The second Zone conference for zones 1, 5, and 6 for the remaining offices was held in Bloomington in early June, 1964 with approximately 60 individuals attending each conference.

Between these two conferences, we visited the Blue Bell Research Center of the Philco Corporation near Philadelphia, Pennsylvania on April 14, 1964, being interested especially in their new computer complex. Philco was one of the early radio manufacturers which Ford Motor Company purchased in 1961 but retained the Philco name until the *name* was again sold in 1975 to GTE Sylvania.[62] (Little did I realize then that Blue Bell, Pennsylvania would become the corporate headquarters of the Unisys Corporation which within the next 30 years would be the parent company of a merger involving two former major competitors of IBM: Burroughs and Sperry-Rand, then holder of the UNIVAC computer patents.)

Immediately thereafter, on April 16, we hosted a visitation by a number of State Farm executives, led by Richard Stockton, including the Corporate Operating Committee, for the purpose of viewing first hand the new equipment in use within the Data Center, such as the IBM 1014 Inquiry Station, and to learn more about the 1400 System. According to an account of this conference in the April 24th issue of the ALFI NEWS, Stockton told the group that the EDP equipment had contributed greatly to State Farm's growth and was quoted, saying "The field is more competitive and we must be more efficient because there's no such thing as standing still in a competitive market". He added that it would be impossible to do manually what was done with the EDP equipment. (It is quite important to point out that at that time, State Farm was already the largest automobile insurance company in the USA and the world, but that lead was **relatively** slim and was not a commanding lead as it is today; hence, it was quite important for every department of the company to contribute to the important task of maintaining that lead and therefore data processing worked extremely hard to give the company a processing edge wherever possible in the "competitive market" described by Stockton.)

We also were minor participants in sessions conducted by IBM Manager Glenn Reitzel and Sales Manager Mel Deener, both now retired, serving State Farm at that time, involving an information session on the IBM 1050 system, the future successor of the early 1014 Inquiry Station. The 1050 was an inquiry system designed particularly for long distance teleprocessing inquiries and was especially capable of handling claims inquiries among our numerous claims offices countrywide—a technique which we incorporated into our teleprocessing networks later in that decade.[26] During those years, with the company relatively large but small compared to 1991 standards, it was not uncommon to see top company executives, including E. B. Rust, Sr., in attendance at some rather technical conferences. It was an exciting period for everyone in State Farm.

State Farm Mutual Chooses the PL/1 Computer Language

Because our limited staff was so very busy with these many projects and meetings, sometimes there was no one available but me to attend schools being offered concerning the latest technologies. This occurred on June 23, 1964 after IBM had recently announced the new 360 computers (much more will be said about the IBM 360's later) when I had the privilege of attending an IBM school in Chicago pertaining to some new IBM technologies and especially the new 360 computer, which became the next basic computer system implemented by State Farm.

About three weeks later, during the week of July 14th, many of our EDP Research staff attended a COBOL computer language school taught by IBM instructors. For our personal benefit, this school was held within classrooms of the old Home Office building. It was as a result of this rather intensive COBOL class and similar classes on the new PL/1 computer language which enabled us to make a direct comparison of the two languages and choose PL/1 as our primary language for our future Auto Company computers. Among the significant factors involved in reaching that decision were:

1. Although both COBOL and PL/1 were very good languages for general business processing, PL/1 had many of the attributes of both the COBOL and FORTRAN languages used widely at that time. The FORTRAN attributes were especially helpful when mathematical calculations were required. (According to the book, "IBM's 360 and Early 370 System"-PL/1 was initially named NPL unofficially and then officially as PL/I. According to that book, "It drew liberally on the best features of FORTRAN, COBOL, and ALGOL and

included many features not found in any of the three." Later it became known generically as PL/1.)

2. Another factor which influenced us was the suspicion that PL/1 would be supported much better than COBOL, which at that time was promoted by an industry consortium which it appeared would be the vehicle for its technical support. For some time it appeared that concern would be valid, however, in all fairness that concern later vanished. On the other hand, our choice of PL/1 has been applauded by most of our programmers even to this day.

Other events occurred about this time in my personal State Farm experiences which were extremely important to my future with the company. On June 8, 1964, the Board of Directors elected me to the position of Assistant Vice President-EDP Research. This promotion and apparent vote of confidence was very much appreciated and particularly after the very trying period of the 1400 System expansion into the regional offices. This expression of confidence persuaded me to remain with the company despite the receipt of an unsolicited set of offers by other insurance companies including the Equitable Insurance Companies. The most intriguing offer was one to manage the new NAIA Computer Center in downtown Manhattan in New York City. Although salaries are not divulged in this book, it was a very tempting offer. However, it was refused because this "old country boy" would not have enjoyed commuting to work in downtown New York City; and, even more importantly, working for State Farm was an extraordinarily happy experience for me, certifying that the decision reached those many years ago was the correct one.

State Farm Begins Writing Health Insurance

We in EDP Research had been kept abreast of the company's intention to branch out into a new insurance field, the writing of Health Insurance as part of the State Farm Mutual insurance offerings. It was important for us to be closely involved with this new project and it was perhaps the first time that a project of this size had to take into consideration the intricacies of computer programming because of the complexities of the 1400 System.

To the credit of our entire top management, they were well aware of the importance of being able to process the new Health Insurance applications and policy issuance before any industry-wide announcements were made about State Farm's entry into the new field. Therefore, when President Rust met with Marquardt and me on September 10, 1964, he wanted to be absolutely sure the computer systems would be ready for the announcement that he was going to make later that day. As a result of that foresight and coordination, that announcement provided ample time for EDP Research to complete the Health System programming even though we did not begin the actual programming process until a week later, September 17, 1964. Having been given complete prior briefings of the essential elements of the Health Insurance plan, we were able to utilize many elements of the 1400 System programs already in existence. Although programming of this project was not completed without some problems, it was one of the smoothest we were ever to encounter because of the very fine cooperation and coordination between all parties involved.

Real Time Introduced to State Farm

The term "Real Time" was first introduced into the general vocabulary for State Farm management on December 17, 1964 with publication of a general memorandum to *top management* (only) describing the potential of the real time concept.[26] (The complete concept explained in a formal proposal for implementation in State Farm was not published until many years later, 1969.)

In order to be able to bring this subject into its proper focus, it is necessary that we first define the word "Real Time" since, perhaps, no major industry has a more non-standard vocabulary than that of the computer industry. "Real Time" had then (and may have today in 1991) varied meanings. Real Time was explained in my 1965 paper delivered at the I.A.S.A. Convention as "... generally defined to provide a direct and *immediate cause and effect* between the data (transactions) entering the system and the resulting output (product) which may be in any number of forms such as electronic impulses serving as further computer commands or in a more recognizable product such as printed forms, or other responses in audible or graphic form".

It was a concept difficult for many to understand and seemingly an anathema to others, yet without realizing it, much of the computer processing today, 1991, is done in real time. Nevertheless, it required such complicated programming that many businesses, especially smaller businesses, are still introducing the concept for the first time some 25 years later.

In hopefully simple terms, it means that prior to that era, 1964 and for some years later, computers at State Farm required input to be accumulated into separate batches of similar work such as new business, renewal billings, claim processing, etc. before those transactions could be processed. That was necessary because computers of that day did not have the enormous memory sizes or the very sophisticated operating systems which could process work in random order; hence, they had to be manually loaded with the specific program for the batched input that was next in the processing schedule. This was also required because computer video technology (initially cathode ray tube terminals known as CRT's) had not progressed to the point that input could be made available randomly via video screen terminals as is essentially common today.

The "real time" concept, formulated as a computerized technology, ultimately over the next two decades, became so advanced, fast, and powerful, and memories became so enormously large, both physically and via the concept of "virtual memories", that it made it possible to handle each transaction as it was processed in the operating division without the need of accumulating the transactions into the various batches of similar work. Virtual memory technology, as it was first introduced in the mid-1960's, meant that computer memories, using the Random Access Disks described earlier, could expand the "actual memory" of a computer to a memory "virtually" many times its actual size. This was made possible by the extremely fast process of overlaying a portion of the computer's actual memory by the desired program stored in a Ramac Disk needed by the next transaction being entered into the computer in random order. This enabled the computer to "act" as if all the programs were actually in its "real" memory when it was only "virtually" so because most of the programs could actually reside in Ramac Disks and be called into actual memory only as needed.

That concept with those required ingredients for "real time" was first recognized in State Farm with the introduction by IBM of its newest computer line, the Type 360 computers in 1964. As a result of our research into the capabilities of the IBM line of 360 computers, we were one of the first of the insurance companies to introduce the concept of real time processing in line with management's philosophy of supporting any technique or concept that would reduce operating costs in a very competitive era. However, it required a number of years to develop the concept before it was ready for implementation. It was implemented initially only as a partial "Real Time System" and later revised and renamed as the "Delta System", as explained in Chapters VI and VII.

Enter Third Generation Computers

Inasmuch as it was the introduction of the IBM 360 computer that triggered the concept of real time, let us examine the background of the 360 technology which had such impact not only for its users but also had an enormous impact on the computer market of that time. It introduced the third generation of computers. IBM has had very few failures in its history but in 1964 it was just emerging from such a failure—the famous IBM STRETCH computer.[31] According to the authors of IBM'S Early Computers, during the period of 1959 through 1961, IBM was attempting to design and produce a super computer identified as the IBM 7030, but generically known as STRETCH. Competition such as Control Data Corporation had marketed its CDC 3600, faster than IBM's 7090 and was about to market it huge CDC 6600,[2] with capacity expected to surpass that envisioned of IBM's STRETCH.

Many problems plagued the design of STRETCH's unique innovative units. Only a few STRETCH computers were sold including a significant sale to the Los Alamos Scientific Laboratory where it remained in use for a number of years despite many early problems.[31] Its fatal problem was that it was advertised as being about eight times faster than the IBM 7090 but proved to be only about five times faster as documented by tests performed by the Lawrence Radiation Laboratory. It simply did not fulfill its design objectives. Designed as IBM's first super computer and intended to dwarf its competition,[60] costing about $13,500,000, its failure to perform cost IBM approximately $20 million. But as a result of its many pioneering attributes in the form of new technologies never used before, IBM used many of those new concepts in its newer 7000 Series introduced in the early 1960's and was a tremendous attribute in the design and success of perhaps IBM's most successful computer ever, the 360 System.

STRETCH had been "an experimental testing ground of daring ideas and upon Project Stretch as the regimen that had cleared the way for the 'giant step' of System/360" according to the authors of the book "IBM's Early Computers". With the threat of possible failure of the STRETCH project, IBM began work on a new transistorized series of machines which were to be known as the 8000 Series. It was intended that this series of computers would not only possibly replace STRETCH but would be downgraded from the super computer category and also expanded as a possible replacement of both the highly successful IBM 1400 Series and the 7000 Series.[31]

IBM Group Executive of Data Processing,[2] later IBM President, Vin Learson, believed the 8000's would give the appearance of being stopgap machines which he definitely wanted to avoid. The 8000 Series was scrapped as well as a plan to expand the 7000's in two directions for both larger and smaller versions.

Learson then assigned scientists and technicians to an entirely new project which he named the New Product Line or NPL after the idea of expanding the 7000 Series had also been abandoned. The NPL became the new powerful 360 Series of computers. (Being personally heavily involved during the early 1960's, I remember the NPL was characterized as highly secretive but somehow I was fortunate to learn of many of the attributes of this new computer line, although not its designated code number—the 360 Series, long before its official unveiling.)

According to author Robert Sobel,[2] the NPL was in difficulty from the very beginning, largely because of a clash in philosophies between Gerrit Blaauw, a major force in the 8000 Series computer (ultimately abandoned) and Gene Amdahl, who wanted to include a revolutionary "all-integrated" circuit line. (This was the same Gene Amdahl who later resigned from IBM and established his own company, featuring the AMDAHL major computer systems.) It is interesting to note that ultimately Amdahl's philosophy prevailed as author Sobel stated, "With

Learson's leadership, Amdahl's technology and (Albert) Williams financial acumen, (Tom Jr.) Watson did not wager the company so much as rebuild it." This statement reflects IBM's complete change in philosophy in the early 1960's by abandoning its two most prosperous lines, the 1400 Series and the 7000 Series computers for the new NPL (360) line.

The decision to embark on the "gutty" path of the NPL line of computers not only was extremely costly, but changed the whole computing philosophy of the country to say nothing of its great impetus of catapulting IBM into perhaps the strongest competitive and financial position it was ever to hold—especially during the period of the late 1960's and decade of the 1970's.

The cost of "tooling" up for production of the NPL was more that $570 million in 1963, over $1 billion by 1965, and in excess of $1.6 billion by 1966 when production of the 360 computer line was in full swing. At the same time, this decision was not only revolutionizing the computer technology but was paying off handsomely for IBM.[2] During a five year period IBM increased its work force by 50,000 employees, an increase of about one-third and its value of plant and property increased from less than $2 billion in 1961 to more that $6.6 billion by 1967. We know now that IBM prospered well from the introduction of the 360 computer line, but let us examine why it was so popular and revolutionary.

The IBM 360 Computer Series

First, let us look back at the basic philosophy of the previous computer lines—a philosophy that could be attributed to all manufacturers of that era—which was that early computers built for large volume customers were designed differently than for small volume customers. In addition scientific customers required computers oriented to extremely fast calculations whereas commercial customers needed computers with more emphasis on large data bases and data storage. The initial result was that distinct computer series were built to match those divergent needs. But equal to the factor of the clients' needs was the fact that the early, slow and cumbersome, technology dictated those decisions.

Over those years, computational science emerged from the traditional calculators using mechanical devices such as electrical relays, counters, etc. to early computers employing electronic circuitry and vacuum tube technology. Gradually, with the tremendous impact of the invention of the transistors, computers eliminated the need for huge cooling systems to cool large vacuum tubes and the process of size reduction had begun in earnest. Meanwhile, great strides were being made in the packaging of transistors from single transistors to clusters of components into integrated circuits.

This was a revolutionary change over many years involving many scientists the world over. It is important to point out here, that although

IBM was a dominant force in the practical application of those scientific "break throughs", by no means did it have a monopoly of the scientific research that made that all possible.

I am referring to the tremendous changes that actually preceded and therefore ushered in the extraordinary miniaturization of circuit boards and similar concepts that are so overwhelming today, and which made it possible for IBM to design, produce, and introduce the 360 in 1964. For example, it goes back to the theories of British radar authority, G. W. A. Dummer,[37] who in 1952 envisioned "fabricating electronic equipment in a solid block with no connecting wires". In 1957, a British firm, the Royal Radar Establishment placed a contract with the Plessy Company to build a "semiconductor integrated circuit". In 1959, Jack S. Kilby, an electrical engineer with Texas Instruments Corporation filed for a patent on "Miniaturized Electrical Circuits" which Texas Instruments announced at a convention of the Institute of Radio Engineers. This announcement,[37] and even the rumors of this announcement, set off a flurry of other announcements and patent filings too numerous to mention here. Suffice it to say this activity led to the unfathomable miniaturization of circuit boards, etc. which is so fundamental to the personal computers, work stations, etc. and so much a part of our culture today. But it was IBM's practical application of those concepts which was fundamental to the success of the 360 systems of that day. The most important factors behind the extraordinary success of the IBM 360 were:

1. It incorporated a very sophisticated new technology of Solid Logic Technology (SLT). This technology incorporated electronic integrated circuitry which included "... a class of circuits called diode-inverter logic,[37] with speeds in the 20- to 30-nanosecond range" and ... "planar glass-passivated transistor structure"—both of which are too technical to describe within the framework of this book. Suffice it to say, that this technology was a breakthrough for IBM's goals of a more powerful, more expandable system which thereby was also a more cost-effective system to manufacture via an automated manufacturing process.[37]
2. Some of its additional technical attributes which made it so appealing to State Farm were:
   a. A completely new line of software (programs) products written exclusively for the 360 systems. Among those would be programs that enabled the 360 computer to run 1400 programs via software named "Emulation Programs". That emulation software permitted us to run our 1400 programs on the 360 emulated systems while being rewritten into 360-type high-level languages.
   b. A new multiplexor channel for the medium sized 360 Model 50 and smaller models which enabled it to accommodate the

attachment of slow input-output devices such as printers and terminals without reducing its overall processing speeds. This was particularly important for State Farm with enormous printing and terminal requirements.

c. An advanced Operating System, known as the OS/360 Multi-programming System, enabled a system to handle more than one job at a time within a single processing unit—unlike multi-processing, which was already available and which enabled a computer system to use more than one processing unit at once.

d. Greatly enlarged bulk core storage in the millions of characters rather than the thousands available in the 1400 Systems. Each of as many as 8,000,000 characters of storage were available in eight millionths-of-a-second and each under the immediate and direct command of the system.

e. Built into the 360 Systems was a long distance communications capability with an ability to respond to long distance messages and inquiries via communications terminals, enhanced but similar to the 1014 Inquiry Stations described earlier.

3. The SLT technology and its other technical innovations, mentioned above, were important factors toward IBM attaining its goal of producing a single line of computers that would meet the needs of both the scientific community and the commercial world. Included within this goal was the objective of producing a computer line which could be packaged to fit the computer needs of IBM's smallest as well as its largest clients with a single computer line. (In this connection it also eliminated the competition within IBM itself when the upper end of the 1400 Series competed in the market place head-on with the lower end of the 7000 Series.)[2] It proved thereby to have an extraordinary market advantage which catapulted IBM into its dominant position of achieving more than 70% of the computer market during that era.

This success of the 360 Series was so phenomenal that Tom Wise, Editor of Fortune Magazine, was "permitted to prowl the hallways and offices" of IBM's Armonk headquarters to write about recent developments with a freedom never before permitted by IBM according to author Sobel;[2] and, who also stated, "Thus, for the first time in its history IBM allowed the curtain usually drawn over its internal workings to be parted a trifle."

Wise wrote several articles in Fortune Magazine some of which infuriated IBM management which vowed it would never again open itself to this type of outside journalistic freedom. Sobel disclosed that information because some of those articles revealed "... a record of personality clashes, errors in judgment, and what appeared a somewhat reckless method of confronting problems." However, as factual as he was noted to be, Wise had apparently misinterpreted what he had seen and heard about IBM, according to Sobel, when he concluded: "But as accurate in details of fact and as vivid in descriptions as they were (Wise's articles), they suffered from a lack of perspective, which of course, couldn't have been recognized at the time but became evident later." Nevertheless, it was a very successful computer line which fit very well into State Farm's computerized requirements and objectives of that era.

Immediate Technological Impact on State Farm

It has already been stated that the long range impact of the 360 Systems was to introduce and work toward the Real Time System concepts. But what was the immediate technological impact in 1965?

The first and most important was to figure out how we could utilize **immediately** all of this immense power and change in direction that the 360 could bring to State Farm. The obvious answer was that we took advantage of the its ability to emulate the 1400 System, without massive re-programming. Next it provided the opportunity to use the power of one 360 System in one office to perform the production requirements for two or more offices via the new communications and teleprocessing capabilities of the new system.

The result was a major effort to reduce policyholder and claims handling costs via the installation of the emulated Type 360 and "Zone Telpak" systems which emanated from the new communication capabilities. Furthermore, this resulted in the initial efforts toward proliferation and dispersion of computerized data bases predicated on user requirements. Lastly, in 1965 it set the stage for the future real time systems.

But what would all of those technological "goodies" that were a part of the typical 360 System cost State Farm? This was a very difficult question to answer at that time because we were proceeding into a hectic period of transition from an established 1400 System to an ultimately enormously advanced real time system, with many significant interim changes upon which we were about to embark. We did know that we were getting greatly enhanced computing power at less cost.

The best and easiest answer as I look back on that period is to compare the relative power versus costs of the typical comparable 1400 and 360 systems. For this comparison we find that the "typical" 1410 Tape/Ramac system had a monthly rental cost of approximately $19,000; whereas, the 360 System within the same monthly rental price range had almost three times the memory capacity and about four times the processing speed and power.

Obviously, this is an over-simplified comparison when the multitude of peripheral options and differing production requirements are considered. Nevertheless, with that cost comparison in line with the enormous technological benefits, it energized our efforts towards the implementation of this system for State Farm. Obviously, with the introduction of the 360 systems and our initial announcement of the concept of the Real Time Systems as early as December 1964, much thought and research was expended toward that goal and therefore it may seem strange that realization of that concept did not reach partial fruition until the 1970's. The reason for that slow development was that in the mid-1960's, State Farm was already a "juggernaut" which could not be changed at a "moments" notice. Therefore, our ultimate goal was achieved as a result of many interim system enhancements and advancements as a result of an *evolution*, not a revolution. It was truly a step by step process.

Without getting too deeply into the essence of the next chapter which deals with that evolution, let me explain that in 1965 we began to embark on many smaller steps that would gradually evolve into the radically altered Real Time System, renamed the Delta System, but which essentially used the Real Time System concepts. This period of evolution was one of consolidating the success of the 1400 System by utilizing the "new wave" of technology changes sweeping the country at that time, and the great advances in the field of teleprocessing. Thus, the year 1965 was spent closing out the very successful pioneering Era II; learning as much as possible about the 360 Systems; studying the various aspects of the teleprocessing technology; and, introducing the first phases of the communications and teleprocessing era. On July 7, 1965, my formal "Proposal For State Farm Mutual's Teleprocessing System" was accepted by top management and we were given approval to begin *exploring* and *designing* the first of a series of major teleprocessing and communications systems connecting the Home Office with the regional offices existing at that time. (Implementation of those systems is the subject of Chapter V.)

Other Important Occurrences During The Mid-1960's

While we were busy getting ready to introduce the new communications age to State Farm in the mid-1960's, other very important events were occurring within and outside of the company. Some of those more important events were:

1. On January 12, 1965, the first meeting of the *new* Electronics Committee, including members from the Auto, Life, and Fire companies, was held with C. A. Marquardt as chairman.
2. Although this book covers only State Farm Mutual systems, the State Farm Life Company was making news with its new RCA Spectra Computer System which had only recently been announced. The State Farm Electronics Committee devoted an entire session on February 16, 1965 on this subject, during which

the Life Company representatives explained the attributes of this system. (According to the ALFI NEWS dated January 13, 1967, the Life Company would replace its current RCA system with the new SPECTRA later in mid-year.)

3. Willke met on May 26, 1965 with the executives of Recognition Equipment Corporation in Dallas, Texas, then the leader in the experimentation of optical scanning of handwritten material. The significance of that visit was the opportunity to observe actual processing of "hand printed" forms as well as "printed" documents, being scanned by equipment soon to be delivered to Washington D.C. for the Post Office Department. Optical scanning via electronic equipment was a new phenomenon in those days with heavy research funding by many electronic companies including IBM. This was the beginning of many years of research by State Farm in conjunction with companies investing in computerized handwritten and printed optical scanning techniques.

4. The only new regional office established during 1965 was the Seaboard Office at Frederick, Maryland. It was opened for business on July 12, 1965 as State Farm's twenty-first regional office.

5. Marquardt renamed the Planning & Research Department as the *Service & Systems Department* through the publication of General Executive Memo #92, dated June 8, 1965. There were 73 Planning & Research employees in the entire department on that date of which 28 were in EDP Research. (This number would increase dramatically on September 1, 1965 as a result of a departmental reorganization. See item No. 6 below.) Those 73 employees, including EDP Research personnel, were located largely on the 9th floor-south of the old home office building. However, we were running out of room and therefore some units were on the 1st floor-south, 10th floor-south, and on the second floor of the Data Processing Annex, which was attached to the Illinois Office.

   The purpose of this action was that the department's primary activity had become that of being the general department of the Service Sections of the Operating Divisions; and, the planning activity had gradually become one of designing and creating computer and other insurance type systems. Hence, the name Service & Systems Department. (Remember, Data Processing as a general department was not to occur for approximately another five years.)

6. In the August 27, 1965 issue of the ALFI News, an article captioned "Inside State Farm" announced officially that IBM 360 Emulated Systems would begin replacing the installed 1400 Systems throughout the company. This replacement program would involve 42 leased IBM 360 systems to be installed over a period of time to be

completed in 1968 with the new communications plan (mentioned above). These 42 systems would be valued at $30 million with the first system to be installed in September 1965 in the Illinois Office.

7. On September 1, 1965, Marquardt announced the official renaming of the EDP Research *Section* to EDP Research *Division* of the Service & Systems Department. With that announcement, two additional organizational changes were announced:

   a. Richard Andes was named as the second Assistant Director, EDP Research along with Roger Woodrey, named earlier.

   b. All programming activity would thereafter be assigned to the EDP Research Division divided into two sections: Research activity and programming to be under Woodrey and production programming under Andes. (Production programming had previously been under the direction of Clayton Sturgeon, Asst. V. P.-Methods & Procedures).

8. On September 24, 1965, a technical change was forwarded to IBM requesting that all magnetic tape drives to be delivered with the newly ordered 360 Emulated Systems were to be equipped with 1600 byte-per-inch tape drives rather that the 800 byte-per-inch drives then in use. This effectively doubled the capacity and read/write speed of those drives.

9. EDP Research initiated exploratory discussions over a two day period, September 30-October 1, 1965, with officials of the Canadian, Michigan, Seaboard, and Florida Offices, together with representatives from IBM and AT&T, about the potential of connecting two regional offices via the new Telpak high-speed communications line between any two offices within the USA and/or between the two countries. The objective was to reduce processing costs by processing the daily transactions of two offices, via Telpak lines, with the power of a single 360 Model 40 Emulated System and a smaller 360 Model 30 system in each office, thereby obviating the need for the second 360 Model 40 in the smaller of the two offices. Those opening discussions led to the major communications networks, including the Zone/Telpak Systems, which were to be implemented during Computer Era III, the years 1966-1968.

10. European visitors continued to visit our company, especially our data processing facilities. On October 22, 1965, Dr. Mueller-Lutz, Director and a Mr. Nielson, both of Allianz Insurance Co., Munich, Germany (the largest in Germany), visited us to learn more about our data processing techniques and philosophies.

11. On November 9, 1965, long time Accounting Department Executive and Chief Auditor at the time of his death, Lewis L. Cox died in

Rochester, Minnesota while under the care of the Mayo Clinic. Cox, as was explained in Chapter II, was one of the principals in the early days of record keeping at State Farm.

12. By November 24, 1965, space in the old Home Office building (currently the Fire Building) was again at a premium. We moved the Units formed in September under Asst. Director Richard Andes to the second floor of the Data Center, which was attached to the Illinois Regional Office, resulting in more space for the research units under Asst. Director Roger Woodrey and the other units of the Service & Systems Department. We were beginning to grow at an increasingly faster pace.

13. On December 9, 1965, we hired Wayne Miller, currently one of the key executives of the Data Processing Department, as a transfer from the Missouri Regional Office in Columbia, Missouri. Miller has had important managerial positions in data processing including a leading role for many years guiding the agents' computer project known as the ECHO Systems.

As we were closing out the year 1965 and thereby the "ledger" on Computer Era II, looking forward to 1966 and Computer Era III, we want to look at the status of data processing in the company and other "environmental" conditions with which we were concerned at that time. We find that we had many other "insurance" programs with which we had to devote programming time both in the Research Section under Woodrey and the Production Section under Andes. These primary programs involved new concepts as well as revisions:

1. Monthly Pay Plan
2. Hospital Policy
3. Imported Automobile Policy
4. Agents' Draft Authority
5. Consolidated Mail for Agents
6. Zip Code Changes
7. National Auto Theft Bureau
8. Fire Auto Claims
9. Crop Hail & Workman's Compensation Claims
10. Special state programs for New York, Maryland Etc.

Keeping up with the fast-paced changes in computer technology and the insurance programming, of which those mentioned above are only a few of major consequence, required a significant research effort and rapid expansion in our computer and human resources. In early 1965 as a result of that expansion and our efforts to keep ahead of the industry, Marquardt was able to report to State Farm's Executive Council, Operating Committee, Regional Vice Presidents, and the Electronics Committee that:

"Just (recently) we were honored with an invitation and a request to give one of the opening addresses before the Third International Electronics Seminar to be held June 21-25, 1965, in Paris, France."

Marquardt assigned that request to me which was to cover the "Evolution of the Equipment and Prospects for Insurance." For obvious reasons State Farm declined the invitation because of travel costs, etc.

Marquardt's report continued to say that State Farm Mutual would agree to participate in the Seminar to the extent that we would furnish a paper which could be presented by someone over there on the subject, "A Real Time System for the World's Largest Automobile Insurance Company."

Marquardt's report continued:

"The Seminar Program Chairman, Mr. Jacques Destombe ... readily accepted this offer. This leads me to the purpose of this memo.

"State Farm Mutual is not content to sit idly by and take the position that we will have the ultimate in E.D.P. Systems by the time we complete the installation of our 1400 Series System. Much more can be accomplished in this area than ever before in view of recent announcements of new product lines by manufacturers." (Jacques Destombe visited State Farm at least twice during those years.)

Luckily for State Farm, that was the viewpoint and moving force around the fast and productive research financed and fully supported by Marquardt and top management, especially President E. B. Rust, Sr., during that period of our data processing history. But those research advancements had their price!

The first noticeable cost was that it was becoming difficult to install those new concepts as fast as we would have liked and yet have them working "error free". Because of the increasing need for more experienced personnel to research the new concepts and especially to keep those systems already installed working at a high degree of perfection, there was a price for such advances. Not only did our own department want those new concepts implemented with perfection, but it was desired even more urgently by the regional offices which had to work with those new concepts.

Unfortunately, although only beginning to appear, it was evident as our systems became more complex, the "price" in terms of programmer time required was that more and more problems began to plague us along with user impatience.

The second noticeable price was that the cost of the resources needed to meet those needs also began to mount. It is extremely interesting to note, with the advantage of twenty five years of hind-sight, that 1965 was the absolute "high-water" mark of data processing costs for the years 1955 through 1980 when comparing **total** data processing costs as a *percentage of Earned Premium.*[63] In 1955, that percentage for data processing hardware was .0065 whereas it was .0108 in 1965 and began to reduce thereafter. However, in 1955, that percentage for data processing employee costs was .0044, remained at .0044 in 1965, and reached its high point in 1975. For *total data processing costs,* the percentage for 1955 was .0109, rose to its high figure of .0152 in 1965, only to lower and rise again in 1975 to .0151 before retreating again to .0108 in 1980. Naturally, actual costs continued to soar as the company continued its inexorable growth.

The actual General Ledger rental costs for data processing equipment for 1965 were:

Regional Offices	$8,458,380
Home Office	397,363
Total Companywide	8,855,743

It is my opinion that the reason that the data processing costs as a percentage of earned premium reached it peak in 1965 is because of several unusual factors meeting at the same point in time. Among them were:

1. The ultra-fast pace of new computer technology and the cost of EDP Research activity trying to stay abreast of those changes caused a "piling up" of costs of maintaining the old systems and bringing in new systems at the same time for research purposes—a phenomenon that at that time was **relatively** very costly.

2. The advantages of the outstanding 360 Systems took some time before we could benefit from the unit cost reductions and therefore we could only begin to experience those benefits *after* the year 1965.

3. It appeared that earned premium rose at a relatively slow pace during the mid-1960's partially because of a corollary slow increase in the cost of living which had some influence on earned premium.

Let us turn to other measurements of the company's "health" at that time. Using the same State Farm Statistical Report figures used for previous years,[6] we find that State Farm had twenty two offices, including the Home Office, 16,070 employees, 10,161 agents, 8,890,514 policies in force, more than $3,766,800,000 Life Insurance in force and over $98,684,000 Fire Direct Premium Written.

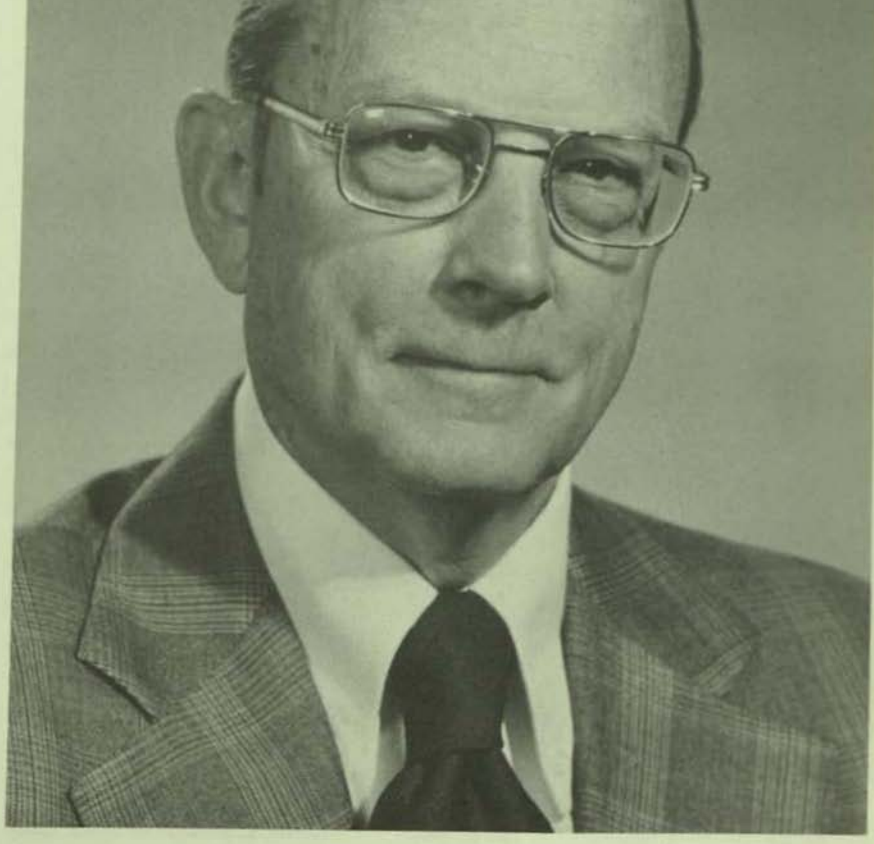
In the Auto Company, those figures represented a policy-in-force growth of about 43.9% for the five years since 1960. In terms of data processing costs, that growth required the expenditure of a total companywide data processing hardware cost of $8,855,743 and a data processing employee cost for 401 data processing employees (country-wide) of about $3,622,000.

The number of EDP Research personnel by the end of 1965 had reached a total of 51 employees involving administrative staff, systems analysts, and programmers. We were located on three floors in the Home Office (downtown Bloomington) but again becoming urgently over-crowded. At year's end, we had expanded further into the first and tenth floors of the Home Office and had transferred more individuals to the second floor of the Data Center. Richard Andes, as an Asst. Director, had the entire production programming staff of approximately half of the total 51 EDP Research employees on the second floor of the Data Center. The remaining EDP Research staff including my office, my secretary, and the remaining units reporting to Roger Woodrey, Asst. Director, were on the fifth floor south of the Home Office Building. We remained a division of the newly renamed Service & Systems Department.

The remaining units of the Service & Systems Department, other than EDP Research, remained at approximately 25 employees including Marquardt and his secretary Bess Dragoo. (That number vacillated up and down a few employees at that time.) That made a total of 76 employees in the department as of the end of the year. Included in that figure were Arthur Dierkes and his secretary but those specific Data Processing employees working on the computers under Dierkes direction numbered 30 employees.[66] They were charged to a separate data processing code and therefore not a part of the Service & Systems total.

Fortunately, as we closed Computer Era II in 1965, we were in a much calmer environment within the area of our responsibility than we were entering that era in 1962. Our work schedules resembled normalcy but growing very fast. On the outside, the world, however, was entangled in the Vietnam War; Lyndon Johnson was president; and the nation was in one of its longest periods of sustained prosperity—credited to a considerable extent to the impetus generated by the war. That was the general environment as we looked toward Computer Era III.

Richard Stockton, Vice President & Treasurer. Later Chairman of the Board — State Farm Mutual Insurance Co.



Robert Noel, Vice President — Operations.

State Farm Mutual's First 1401 System-Ready for Shipment at IBM's Test Laboratory.

IBM System 1410 with C.A. Marquardt, A.H. Dierkes, & M.G. Willke — 1963.

E.B. Rust, Sr. & C.A. Marquardt with first Ramac Disk Files used at State Farm Mutual.

IBM STRETCH Super Computer, used for many years by the Atomic Energy Commission — never a popular system.

CHAPTER V

Zone Oriented Processing

Computer Era III — *"Reaping Benefits"*
(1966-1968)

The Era began with the usual array of exciting football "Bowl" games. Being a rabid Big Ten football fan, I should have suspected that the Big Ten's dominance would soon end in the New Year's Day Rose Bowl games with the PAC-10 Conference when a favored Michigan team was upset by UCLA by the score of 14-12. (Purdue did win the next year by the score 14-13 over the University of Southern California; but, by the end of that era, the fortunes were beginning to turn decisively toward the PAC-10 Conference.)

The economy was in a long but slow growth pattern resulting in a relatively small increase in the inflation rate; whereas, State Farm was in a tremendous growth period which saw it nearly double its size in the next 5 years. It was this growth that we in data processing were most concerned with during this Computer Era III—both as to the work load on the computer systems and the analysts who were to program those systems. That translated into an increasing need for improved systems and more well-trained personnel to manage that growth.

While the economy was good, the political mood of the country was anything but good. At a minimum, it certainly was unsettled and at times, it is not an exaggeration to say, it was downright "ugly". The country had just begun to get heavily involved in President Lyndon Johnson's "Great Society" which was aimed at placing everyone on "easy street". At the same time, the country was trying to solve racial discrimination issues and was sinking deeper into war. We were becoming, during that three year period 1966-1968, a divided nation as to the pros and cons of the Vietnam War. This eventually led to one of the ugliest periods of our nation's history, dividing our people both politically and emotionally to such a degree that the Democratic National Convention in Chicago, during the summer of 1968, became a bloody battle ground between the protestors of the Vietnam War, who tried to storm the convention, and the Chicago police under the direct control of Mayor Richard Daley, who were heavily armed including "night sticks" which they used freely. It still stands out in my mind as one of the low points in our nation's Psyche.

Even the weather for the early portion of the year 1966 was significantly different. According to my diary, we had no snow that winter until after February 1, 1966; however, spring had a very hard time arriving with a killing frost as late as May 10th eliminating much of the fruit harvest for that year.

As we began Computer Era III in 1966, our corporate executives and regional office executives were generally fully appreciative of our efforts to reduce computer costs via the Zone/Telpak concept and other telecommunications networks, which we had introduced the year before and those we were about to install during this three year period, 1966-1968. Those corporate executives, who at that time were most involved with our systems efforts, and whose support was absolutely crucial, were:[7]

A. H. Rust, Chairman of the Board
E. B. Rust, Sr., President
Richard Stockton, Vice President & Treasurer
Robert Noel, Vice President-Operations

Other corporate executives whose departments were principal users of those systems at that time, were:

Royal Bartrum, Vice President-Claims
Ted Olofson, Vice President-Accounting
Norm Goelzer, Senior V. P.-Underwriting
Earle Johnson, Vice President-Agency
Harold Curry, Vice President-Actuary
Paul Mitzner, Vice President-Personnel

I am sure *all* other corporate executives of all the State Farm Insurance Companies were deeply interested in our new systems but there were simply too many to record here. An extremely important group of user executives were the 21 Regional Vice Presidents whose office personnel were most affected by the success (or lack thereof) of our systems and who were especially involved with the corporate communications systems we were about to install.

Three other executives, who in a few short years would be directly responsible for data processing's future but were only indirectly involved at that time, were:

Roland Marston, Regional Vice President-North Central
Roger Joslin, Asst. Vice President (President's Office)
Norm Vincent, Director-Agency Research

Finally, the Service & Systems executives, who in varying ways, were responsible for the development, installation, and maintenance of the systems at that time were:

C. A. Marquardt, Vice President-Service & Systems
A. H. Dierkes, Asst. V. P.-Data Processing

C. P. Sturgeon, Asst. V. P.-Methods & Procedures
M. G. Willke, Asst. V. P.-EDP Research

To illustrate that our pace had slackened, although we were heavily involved as a department, Marquardt asked me to spend approximately 10 days during the last week of February and the first week of March, 1966, in the three southern regional offices at Birmingham, Alabama; Monroe, Louisiana; and, Dallas, Texas, to inform them about our future teleprocessing and real time systems and how it would impact them on the basis of their resources and what benefits could be expected from those systems.

That trip was a memorable and happy experience because those offices accepted our new ventures readily after just completing the very taxing installations of the 1400 Systems. I mention this only to reinforce the terrific cooperation among all elements of State Farm as one of the primary reasons for the company's great success in all of its endeavors. (It also gave me a chance to recharge my own "batteries" for which I was deeply grateful.)

Service & Systems Department Moves to Towanda Ave. Building

Because of the increasingly significant growth of the EDP Research Division within the Service & Systems Department, the entire Service & Systems Department other than the Units under Andes, moved from the Home Office to the Towanda Avenue Building (TAB) beginning on Monday August 15, 1966 and the move was completed on September 6th. My office was ready for occupancy on September 2nd.

The TAB building, its generic name, formerly was the home of several types of businesses including a grocery store which it is again today—although extensively refurbished. It was located in the general area northeast of the intersection of Empire Street and Towanda Avenue. The previous tenant was a Piggly-Wiggly grocery and the current tenant in 1991 is the Eagles grocery.

Along with Service and Systems, the Administrative Services Department under James Turner, Vice President-Administrative Services, was a joint tenant. In an ALFI NEWS article dated July 15, 1966 which announced the pending move, it stated that the "Art Department, Purchasing, Design and the part of Administrative Services currently located on the 13th floor will transfer to the new office. Vice President Richard F. Stockton said the move would help alleviate crowded conditions in the Home Office." At the time of the move, only slightly more that one-half of the building was occupied. That changed rapidly as the EDP Research Units under Andes, shortly thereafter, moved out of the Data Center and joined us in the TAB building.

The TAB Building was not the most satisfactory for the needs of either the Service & Systems Department or the Administrative Services

Department. However, it was amply equipped with vending machines and other necessities making it a self-sufficient office environment. In the same building were a barber shop, self-service laundry, and dental office as well as a drug store according to the ALFI article.

Turner, the effervescent head of Administrative Services, had an office which was placed where the banana counter within the Piggly Wiggly store once stood and therefore proclaimed himself the "Banana King" of "Paradise", the name he facetiously gave to the TAB building. (Other more appropriate names were also volunteered). It was anything but paradise on those occasions when rain would penetrate the roof and land on our desks; or, when any one of us would be in the building working alone on very cold, windy, and wintry nights and the whole building howled, squeaked, and squealed as if it were about to collapse.

Other strange attributes of that building included the fact that if anyone wished to work in the building at night, there was only one switch that would turn the lights on or off for the *entire* building when perhaps only one person was in the building. (That flaw may have been corrected in later years.) On other occasions, again if only a very few persons were in the building, because of the quonset-type roof, your discussions were not always private even with normal speech because the sound had a way of traveling anywhere throughout the building. You simply made sure about your conversations!

Although the TAB Building might have difficulty passing the building codes today, it was about the only space available on such short notice at that time. Furthermore, the fact that acoustically it was atrocious caused us to find better ways of combating people noise during working hours since that noise was extremely distracting. As a result the Administrative Services Department, also housed therein, and the Service & Systems Department worked together to test the very first type of noise abatement equipment for clerical people ever tested in State Farm. That test was a direct result of the conditions in the TAB Building which resulted in the fine employee office-type modules installed later in all offices and are in general use in most businesses today. It would have happened in time anyway, but our special noise conditions in TAB gave it an early "push".

The first module tested was in the shape of a plus sign "+" if you could have looked down upon it. It was about 7 feet tall with each of the crossed walls about 8 feet wide. This permitted each cubical to have about 4 feet of wall space on both sides of the 4 cubicles formed by this design. The employees had a credenza type desk on one side with limited cabinet space on the opposite wall and above the credenza work space. It seemed top heavy to me.

After an extended period of testing, our analysts for various reasons were not happy with the concept. Administrative Services then brought in the first 4-walled test cubicle with walls only about 5 feet tall but similar to those in use today. Its main purpose was privacy, and space for a desk and shelving for books, etc. The design was well accepted and with significant modifications was placed in offices throughout State Farm by the early 1970's.

Nevertheless, the TAB Building filled a dire need caused by the accelerating requirement for more space at the beginning of Computer Era III. Both departments remained in TAB until the new Corporate Headquarters at One State Farm Plaza was ready for occupancy in 1972 by which time every square foot of space was "over utilized" including the second floor because of the extreme shortage of space.

EDP Research Begins Filling Accelerated Growth Requirements

During this era from 1966 through 1968, data processing employee needs accelerated at a tremendous pace. To illustrate this growth, as recorded in Chapter IV, EDP Research had 51 employees and Service & Systems had a total of 76 as of December 1965. By October 1, 1966, EDP Research had grown to 66 employees with 25 employees in the other Service & Systems units for a total of 91. This growth of 15 individuals was entirely within the EDP Research Division while the other units in Service & Systems remained rather static during that era.

This growth within EDP Research of fifteen new employees represented a 29% increase within a little over one year. Those new analysts and programmers were urgently needed as the requirements of the regions placed much pressure on us to improve our on-going programs as well as the need for more analysts to design, test, and implement our growing computer research programs. (Unfortunately, we were not able to keep up with this growing pressure adequately resulting in some user dissatisfaction of our efforts.)

Fortunately at a time when we were just beginning to learn how to hire and train increasing numbers of new analysts, it was our privilege during that era to work very closely with three very helpful and outstanding individuals in the Personnel Department—Bruce Callis, Vincent Trosino, and Gerald "Jerry" Strickland, all three currently top executives—in the hiring of nearly everyone entering EDP Research. Those three individuals worked diligently and closely with us to secure the type of employees which we felt were best suited for our requirements. (Today, Trosino is Executive Vice President of State Farm Mutual—Callis is Vice President in the President's Office—Strickland is Regional Vice President of the West Central Office, Lincoln, Nebraska.)

EDP Research was looking for top quality people with a background of a fine work ethic, a college degree if at all possible, who had passed the personnel tests with a grade of "C" or better, born and raised preferably in a small city or on a farm, and who had demonstrated an ability for management potential with leadership qualities—a tough set of requirements, but we think we generally succeeded. (At that time, certified computer professionals did not exist and we therefore did not "hone in" on that qualification.) As a result, it is our conviction that with the fine help of those above named individuals in the Personnel Department, we built a very fine EDP Research work force over those years.

First Training Coordinator Hired by EDP Research

Our hiring and training methods took a major step forward during this era as we hired our first Training Coordinator in the role as a Staff Assistant to Willke—John "Bill" Wilkens on November 4, 1968.[26] In the first ever position of this nature in EDP Research, Bill did a very fine job of relieving our management team of the increasing hiring responsibilities as well as establishing the guidelines for the training requirements for our trainees once they were "on board". Our new training coordinator also established classes and arranged for the classrooms and instructors, IBM and/or State Farm's own instructors, depending on the needs. However, Wilkens had other duties in addition to being training coordinator.

Wilkens came to State Farm after beginning his career in Peoria as an IBM Marketing Representative under the direction of Branch Manager Horace "Hoot" Gibson, deceased. Wilkens joined EDP Research because of his expertise with computer program packages which IBM was beginning to market under their new marketing scheme called "Unbundling". Prior to that time, IBM provided its computer software on a "bundled" basis,[70] meaning that when a company leased IBM equipment part of the inherent "package" was the software needed to operate the computer system at no additional charge. With unbundling in 1968, users such as State Farm were required to purchase this IBM software as well as pay an hourly computer usage fee measured by timers that IBM attached to the systems to measure such usage. Although timers were introduced in the previous era, the user fees had been changed and were so new and quite different making Wilkens' knowledge of those changes quite important to us.

When Wilkens joined State Farm, we formed a small group, not an official Unit as they were then known within State Farm, but a group that was to establish the support needed for future Real Time processing including the training and instructions needed because of the IBM unbundling decree. This group included:

Tom Rettig-Group Leader
David Vitek
Steve Cullen
Edward Saari
Bill Wilkens

After their initial schooling at the IBM offices in Chicago including instructions about the new operating systems, computer languages, and training methods, this group began training the others in EDP Research needing such training concerning the courses provided in Chicago.

This group also designed the first training courses used by EDP Research which replaced the training formerly provided by IBM under its "bundled" practice. Another result of the IBM unbundling scheme was that State Farm pursued the new concepts known as lease-back contracts involving such third parties as the Dearborn Corporation and other lease-back companies.[71]

All of this meant that State Farm either purchased the training for its IBM packages or provided for such training by establishing its own training mechanism and classes. That is another reason why Wilkens' intimate knowledge of IBM practices was welcomed.

A direct result of the effort by the initial group under Rettig was the eventual establishment of two different groups leading to the Technical Support Unit and a Training Unit. The Technical Support Unit is a subject of greater importance in future chapters when it became a very important aspect of computer support. However, the initial direct result of the effort by the group under Rettig was the establishment of the first formal Training Unit.[72]

The Training Unit initially consisted of Bill Wilkens as supervisor of the Unit which included Ken Christensen and Milam England (deceased). Ultimately, Wilkens responsibility became primarily that of a training coordinator and was replaced by Rich Buchanan in 1970 when Wilkens transferred to the Home Office Personnel Department. Christensen taught the first PL/1 classes and England taught the ongoing Autocoder language used for the still quite heavily used 1400 System programs as part of the 360/Emulator systems. (PL/1 was initially identified by IBM as *PL/I* but took on the common identification of *PL/1*. See Chapter IV.) In addition to teaching these classes, Christensen and England expanded the context of these classes by initiating concepts that were new at that time including such innovations as Video Training Courses produced by Advanced Systems, Inc. with offices in Chicago.

Christensen built the Training Unit into an efficient body of instructors and trainees covering the many facets that make up much of the technical training necessary for a data processing endeavor. (Much more will be written about the training aspect in future chapters.)

EDP Research Organizes "EDP OPEN" Golf Tournament

As EDP Research was being transformed rather rapidly from a closely knit group of a few employees to a much larger and impersonal organization, Woodrey, an excellent golfer, and I, just a "hacker", decided that a very fine way for our employees to learn more about our newer members and each other would be through the casual setting of a golf tournament, held exclusively for EDP Research. Inasmuch as we worked very closely with the few IBM sales and technical support personnel stationed in Bloomington/Normal, we decided to include them in our invitation for the tournament.

With the plans in place, we held the first "Golf Day", as we named it, at the Highland public course in Bloomington. (It did not become known officially as the "EDP OPEN" until the following summer of 1967.) According to my diary, the first "Golf Day" was held on July 9, 1966. My diary also reveals that about 35 individuals including four IBM'ers played golf that day. Since this is "my" diary, obviously I included only such "important" details as the fact that Woodrey and I each won a golf ball—for Woodrey to have the low score was absolutely no surprise but for me to win the longest drive was utterly unbelievable! (In the subsequent 26 years since that first event, I returned to my level of competence by being winless.)

We concluded that warm, beautiful day, with a modest lunch. That was the beginning of the annual event still going strong within the Data Processing Department and so well attended that it is limited to a number of about 125 players. Even with that limitation, very few golf courses are willing to share their course exclusively for the day—usually held on a Saturday morning in July or August. (One of the kindest expressions of respect and one I cherish dearly is that upon my retirement one of the "perks" was a lifetime invitation to the annual "EDP Open".)

Since that initial event, beginning with the first official EDP Open in 1967, twenty five successive tournaments, now known as the DP Open, have been held at various courses all over central Illinois. Space will not permit discussion of those twenty five events except to identify the fact that Woodrey and Willke furnished the tournament committee with a golf trophy on which is listed the name of Charles Cappis, one of the early members of EDP Research, as the first tournament winner. (Incidentally, my records also provide his net score which will not be revealed!) Cappis was given the trophy permanently when all available space for subsequent winners had been exhausted. (See Appendix F for additional details about those tournaments.)

State Farm's National Transmission Systems

Turning to the more serious and notable events occurring during that era, from the viewpoint of EDP Research, were the advancements that were being made in the department toward the design, programming, and installation of the two major transmission systems that were on the "drawing boards":

1. State Farm's Countrywide Teleprocessing System
2. The Zone/Telpak Systems

State Farm has always emphasized among its paramount objectives that of premier policyholder service at the lowest possible cost. That is why the emphasis which EDP Research placed on the two teleprocessing systems during the years 1966-1968 had such strong support from our top management.

A Business Week magazine article dated February 26, 1966 headlined an exclusive article about State Farm in this manner: "State Farm Mutual sets an industry pace by holding costs down and concentrating on personal service . . . " It is indeed a comprehensive article about all of State Farm's companies, stressing its unique methods which paid off then and still do. The article also pointed out that it was the insurance leader and that "Many of State Farm's innovations have been copied by other insurance companies, of course. 'Its offbeat approach isn't offbeat anymore.'"

In the same article its sub-headline was "State Farm has 42 IBM System/360s on order" which was another way of saying that much of its success in keeping costs under control was by being a leader of computerized innovations. It also divulged the information that the company had an underwriting loss in 1964 but through aggressive moves, it had an underwriting gain for 1965. It was *that* corporate "tone" that made us in EDP Research all the more aggressive in our effort to assist in the corporate objective of cost reduction through innovative concepts—especially as a pioneer in the design and implementation of teleprocessing networks.

The following is an excerpt published in the Insurance Management Review which explains why the computerized teleprocessing networks that we were introducing at that time were so appropriately in line with State Farm's business objectives. It was published in the October 23, 1965 issue:

> "State Farm's application of data processing facilities is geared to parallel and complement the company's decentralized operating structure. The company's first business tenet is **policyholder service.** This means locating service facilities out in the field, close to agents, claims offices, and customers."

That statement explains perfectly why the teleprocessing systems were so important to State Farm then and have become increasingly so in the intervening years. As the American public became more mobile, it became all the more imperative that immediate claim service would be available wherever our policyholders might have an accident. This created the need to bring policyholder and claim information to the claims representative and eventually the agent instantaneously even if the insured's records were across the country. That is only one of the major reasons for the need of the nationwide teleprocessing systems at State Farm.

State Farm's Countrywide Teleprocessing System

An article in the Data Management magazine, published in January 1966, spelled out more succinctly the aims and goals of the soon "to be" installed teleprocessing system (to be distinguished from the Zone/Telpak System described later in this chapter) and why it was so important in State Farm's overall scheme of operations.[155] In explaining the transition from the just-completed installation of the 1400 Systems to the new task of implementing the future teleprocessing system, let me quote from that article:

> "... In sum, the 1400 Program provides the foundation for all transaction processing—from the issue of new business through the handling of transfers, cancellations, billings and payments, changes of status and automatic pending processes which only terminate either by payment or expiration. At the same time, the system accumulates and breaks out all the information management needs for day-to-day control of the business.
>
> "For all its efficiency, the program was started on the road to obsolescence at almost the same time the last of the 20 regions was converted last September (actually in May). The company has already launched a program to replace the 1400 series computers with the more powerful System 360s. Initially, the computers will emulate the 1400 Program operations and add teleprocessing capability for the interoffice communications setup '(expected to be operative next year)'. Later, the vast data cell information storage capacity of the System/360s and their program refinements will make a reality of the real-time processing goal.
>
> "Obviously, State farm is not making such a hefty investment just to keep employes amused watching the blinking lights and whirling disks. The 1400 Program pays substantial dividends in areas that count heavily in the insurance business—better service, lower costs, and responsive management. And, it has played an important role in the company's phenomenal post-war growth.
>
> "... In operation, a System/360 computer at headquarters' data center will serve as a computer, governing polling and message switching throughout the networks of administrative message and status inquiry lines. Communications lines will be set up between regional offices and the home office and between regional offices, claims offices, service centers and drive-in offices. The administrative network will be made up of six circuits (actually seven) around the country, all terminating in the data center in Bloomington. The message

switching setup will operate completely automatically and unattended. It is programmed to provide an average response time of 5 minutes and a maximum of 30 minutes for message switching to and from any point. (When the system was actually installed those times were much faster than anticipated at the time of this article. Remember those were objectives of response times anywhere across the nation.)

"The inquiry network embraces five circuits and links the regional offices, home office, claims offices and service centers for information retrieval purposes only. This network is programmed to provide an average response time of 90 seconds to a maximum of five minutes to secure a policy status inquiry message from any terminal in any part of the United States from the computer located in any of the region offices. (That response time also was much improved when the system became operational. It should also be pointed out that this system embodied 2 separate networks—the Administrative which handled general Western Union type messages and the Inquiry which handled policy and claims type messages similar to those explained as claims inquiry-type messages originally designed for the 1400 System.)

"... Servicewise, a policy holder whose account is recorded in the computer files at the Illinois region office, and who had an accident, in, say, Florida, could go to the local claims office. In minutes, the claims office could secure details of the motorist's policy coverage and payment status and arrange for repairs. The network opens up an entirely new field for supplying policy information to service centers for complete handling of policyholder requests.

"On the administrative side, the teleprocessing setup is expected to reduce the number of administrative messages, the total message count per claim handled; and improve the clarity of messages. Also, it opens up transmission of management information to handle-day-to-day decisions, based on information that is still current and meaningful."

The above excerpt from the Data Management magazine sums up quite well the basic concepts and objectives of the first of the two communications systems—The State Farm Countrywide Teleprocessing System. Let us now examine the details of its design and implementation time frame. To place the significance of this endeavor in its proper perspective, it is appropriate to point out that this pioneering system was the absolute forerunner of the current quite-complicated and efficient "Electronic Mail" systems designed and implemented by State Farm during the decade of the 1980's and constantly being improved.

Implementation of Countrywide Teleprocessing System

Having already published the proposal for corporate consideration of this network in July, 1965, our next requirement was to decide whether Western Union, our previous telecommunications carrier (torn tape system), or the AT&T Corporation should be the carrier for this rather extensive communications system with its two networks. We initiated this system by meeting with Stockton and Marquardt on March 23, 1966 at which time a decision was reached to use the AT&T long lines facilities although the original proposal suggested that we remain with the Western Union lines because of its lower costs at that time.

The principal objective of this change was to utilize AT&T's apparent superior expertise in the area of the fast Telpak lines. (The Telpak lines at that time were capable of transmitting 19,200 bits per second whereas the slower Western Union lines that we were using were rated at 150 bits per second.) EDP Research estimated that use of the Telpak lines in conjuction with concept of using one computer to process transactions for more than one regional office on that single computer was the fundamental basis for the Zone/Telpak System that would reduce computing costs about two million dollars per year. Although our objective was to install the countrywide teleprocessing system first, we had to consider both systems in making that decision.

The countrywide teleprocessing system, as stated earlier, was made up of two networks:

1. The Administrative Network
2. The Inquiry Network

The implementation of the Administrative Network was primarily a computer hardware conversion problem although it took the expertise of several of our software experts as well as the very able assistance of a communications team from Administrative Services Department to implement and coordinate all the various facets of the implementation of the system. This required the coordination of the installation of equipment in the Home Office and the various regional offices along with the shipment of the IBM 360/40 as the Home Office Control System. Another important facet of the schedule was the coordination of the implementation of the regional office equipment along with the availability and scheduled commission of the AT&T lines.

The initial Administrative Network, although a replacement of the existing Western Union "torn tape" system, was a new challenge to all of us involved, albeit relatively simple compared to the much more complex Inquiry Network and ultimate Zone/Telpak systems which were to follow.

The EDP Research personnel, IBM consulting personnel, and Administrative Services communications personnel, all of whom carried the primary burden of the design and implementation of this communications system, were three groups of individuals performing distinct functions:

Group 1 - The overall design concepts and changes in those concepts to assure its operational feasibility.

Group 2 - The primary responsibility for whatever programming was required and the installation of the system throughout the regional offices and Home Office Data Center.

Group 3 - The primary responsibility for the installation and functioning of the equipment within the message centers in the Home Office and regions.

Because these three responsibilities were not entirely exclusive but often overlapped, each group assisted the other and often worked within the confines of either group— especially Groups 1 and 2. Basically, these two groups were assigned as follows:

Group 1 - John Janes as T/P Coordinator
Jim Nealand as IBM T/P Consultant[73]
Robert Belusky as IBM Systems Engineer

Group 2 - Ron Parido - Supervisor (*)
Vere Cottrell - T/P Specialist (*)
Carol Garland - T/P Specialist (*)
Barry Salsbury - T/P Specialist (*)
Various GTE and AT&T Consultants (*)

(*) These titles describe their functions, not their official titles. Several GTE and AT&T consultants assisted at irregular intervals.

Although EDP Research operated under the concept that when special projects required temporary assistance, individuals from other Units were transferred for short periods of time to assist in the completion of the project. That happened frequently with this project, albeit that the bulk of that task was performed by the above mentioned individuals.

The Administrative Services personnel,[74] assigned to the responsibilities of the function and control of the message centers in the regional offices and the Communications Center in the Home Office as Group 3, were:

Group 3 - Tom Costigan - Superintendent
Ralph Ash - Asst. Superintendent
Charles Allen - Supervisor
Dewayne Brinkman - Technician (Deceased)

Costigan and Ash initially were located in the Home Office but later transferred to the Towanda Avenue Building with the other Administrative Services Units.[74] Charles Allen a supervisor of the Home Office

Communications Center along with Brinkman remained on the fourth floor of the Home Office Building.

"Torn Tape" System - Forerunner of Administrative Network

In order to understand the advantages of the new Administrative Network, it is necessary to understand the old existing Western Union "torn tape" system previously in use. It was named the "torn tape" system because at the sending terminal, the message was punched first "off line" into paper tape which was "torn" off the remaining roll and verified before being transmitted to the receiving office. At the receiving office, as the messages were received over very slow Western Union wires, it was printed immediately on the receiving terminal equipment.

The communication lines were divided into 7 circuits which connected 19 Regional Offices (Canadian Office excluded)) and 7 claim service centers in the largest metropolitan areas. The seven circuits included two which had a minimum of 2 offices on each of the Mid-South and Mid-West circuits to a maximum of 5 offices on each of the Eastern and Central circuits.

These lines transmitted information at the speed of 75 words per minute whereas the Western circuit transmitted at 100 words per minute. Those circuits transmitted information at the rate of 450 or 600 characters a minute with 6 characters assigned per word. (Varying number of bits made up one word depending on the carrier.) Those speeds were entirely too slow for the growing traffic being placed on those circuits.

At the locations connected to any one circuit, which included the Home Office, specified regional offices, and on some circuits one or more of the seven Claims Offices, was a terminal station made up of a keyboard, printer, paper tape punch, paper tape reader, and occasionally other auxiliary equipment. Each station could communicate with other stations on its own circuit; but, messages from one circuit to be transmitted to a station on another circuit, required the manual switching of the message at the Home Office switching center. That station was a Teletype ASR 19.[76]

It is probably obvious by now that each station had to compete for time on the circuit which caused much waiting at any one station even though the system might not be overloaded. When coupled with the fact that circuits were generally in fact overloaded, the need for the new Administrative Network was already overdue.

The New Administrative Network

As stated earlier, in order to utilize the speed of the newer lines available in 1967, the system was built so that the Administrative

Network and the Inquiry Network (for claims inquiries) were separate networks but because of the low message volumes to some of the claims offices on the new circuits, in those cases those few stations received and transmitted both administrative and inquiry messages over the same line.[75] The vast majority of stations had such a volume of each type of messages that separate lines were used by the two circuits and thereby often were parallel lines.

The objective of the new Teleprocessing System with the two networks was not only to replace the old slow system with a much faster system, but also make it as automatic as possible under the control of a computerized Communications Control System thereby eliminating the previous manual switching requirement. To do this, the IBM 360/40 was installed in the Home Office which through multi-processing was capable of controlling the entire network as well as have additional computing power available for regular data processing tasks.

This 360/40 was equipped with 65,000 bytes (characters) of memory, a Type 2311 Removable Disk for message storage, and a typewriter console for communication between the 360 and operator. The removable 2311 disk storage could store seven million characters of storage for either of the two teleprocessing networks (Administrative or Inquiry) as well as for regular data processing needs when used as a regular computer. This may have been the very first use of removable disks with the 360 Systems at State Farm. A few years later they were in common use until large fixed disks limited their usage.

The new Administrative Network controlled by the 360/40, when operating as the communications control unit, would control which terminal on a given circuit should send or receive data thereby avoiding a condition for which the system was not equipped: to send more than one message over the same line simultaneously. In a matter of a very short time, simultaneous messages could be sent and/or received over each circuit using different frequencies and thereby increasing line efficiency substantially. Initially we installed seven private wire circuits making up the entire Administrative Network. See Figure #1 for a diagram of the Administrative Network initially installed.

The initial terminal used for sending and receiving Administrative Messages was the teletype equipment identified as the ASR 28 teletype system. The ASR 28 terminal replaced the original ASR 19 terminals used by the torn tape system. With this new system, all teleprocessing lines were furnished by AT&T with line speeds for the Administrative Network at 100 words per minute, albeit a still relatively low speed line compared to other faster lines that were available but too costly for the purpose intended for them. The ASR 28 was replaced by an IBM 1050 Data Communications System simultaneously with the installation of the Inquiry Network and still later with the Zone/Telpak System—the second part of the total teleprocessing package.

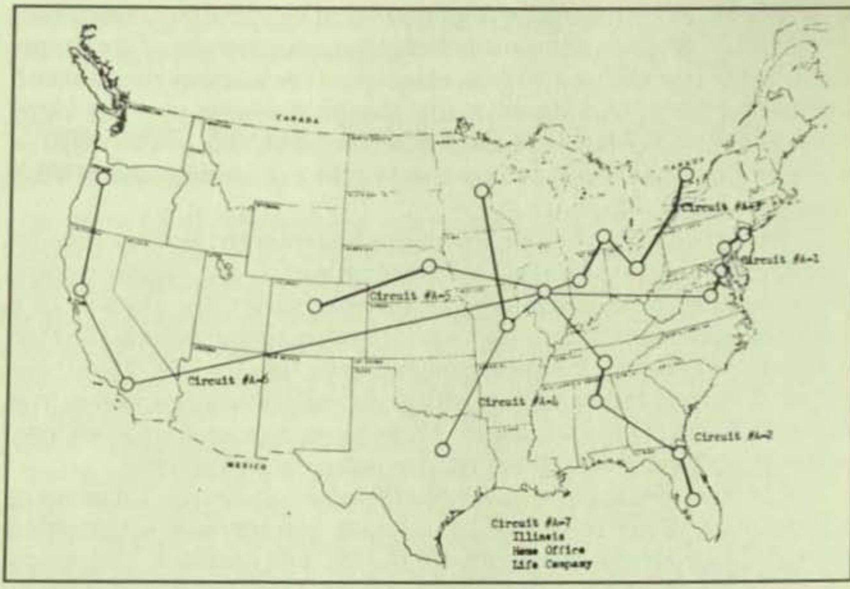


Fig. 1. Initial Country-wide Administrative Network

As in the case of previous large scale installations, the Administrative Network was not installed in all regional offices simultaneously. Hence, when the latter installations were being implemented, we had also begun implementing the Inquiry Network in those same regional offices using the IBM 1050 Data Communications terminals as replacements for the ASR 28 Terminals which were being phased out of existence. Therefore, as the last group of regional offices were being installed with the Administrative Network, the Inquiry Network was also being installed simultaneously—both using the IBM 1050 terminals for the purpose of printing both types of messages. The installations of the Administrative Network were completed by year end 1967 whereas the Inquiry Network was not fully implemented until early 1969.

The New Inquiry Network

The concept of the new Inquiry Network was basically an extension of the concept of the in-house claims inquiries pioneered with the 1400 System using the 1014 Inquiry Terminal. With the new Inquiry Network we could request claims and policy information via the private wire network from the records stored in the Ramac Disk Units for the states serviced by any regional office anywhere in the USA, but excluding Canada. Initially we installed the Inquiry Network over five separate circuits—each controlled by the 360/40 Communications Control System housed in the Home Office Data Center. See Figure #2 for the Inquiry Network configuration initially installed.

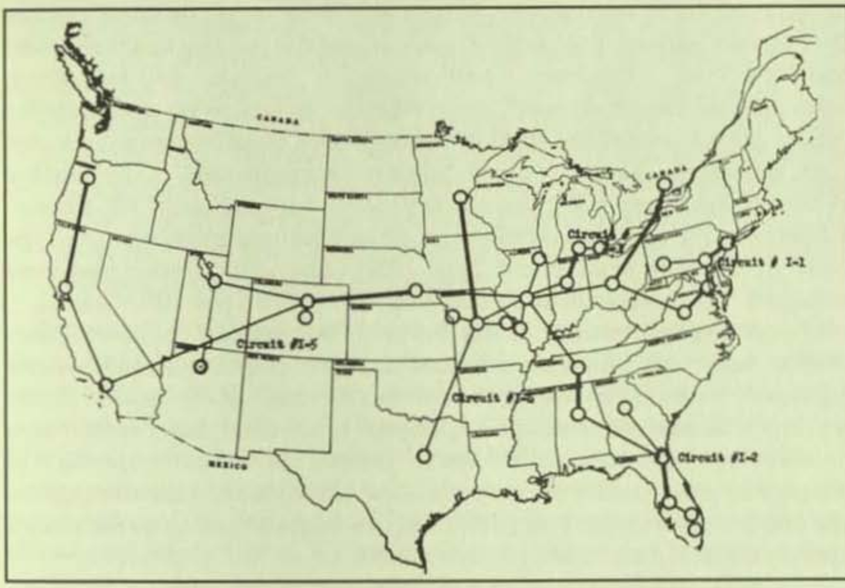


Fig. 2. Initial Country-wide Inquiry Network

The requests for this information could be initiated by employees in the Home Office, regional offices, and those claims offices large enough to warrant being attached to the private wire circuits. Many of the smaller claims offices and service centers continued to request this information via the TWX dial-up telephone lines.

Under the 1400 System prior to the establishment of this new teleprocessing system, claim and policy inquiries within the regional offices could be retrieved from its own in-house Ramac files within 2 seconds; but, inquiries from other regional offices or from any claim service center to its own or other regional office over the old "torn tape" system often took many minutes and sometimes more than a hour requiring manual switching between two or more lines.

The basic operating concept of the New Inquiry Network was to use the same 360/40 as a combination Communications Control Unit for both the Inquiry and Administrative Networks. This single 360/40 controlled the Inquiry Network switching of claim inquiries as it did for administrative messages on the Administrative Network. It performed this dual role of message switching and control for both networks simultaneously.

The control unit used the same IBM Type 2311 Removable Disk Pack concept for storing inquiry messages during the message switching process as it did for the Administrative Network. The most important difference was the location of the inquiry requests and the destination of the inquiry messages, which in turn required different equipment both at the request and destination ends of the Inquiry circuits. The initial equipment used as the request and destination terminals within the regional offices and larger claims offices for inquiry messages were the IBM Type 1050 Data Communication Systems. The equipment attachments varied depending on whether it was to be used only for claims inquiry or for the dual purpose of also handling administrative type messages. As an Inquiry Station terminal only, it required a Selectric-like Type 1052 printer-keyboard and a Type 1053 printer. When used for the dual administrative and inquiry purposes, the Type 1053 paper tape reader and Type 1055 paper tape punch also were required. These various units made up the entire Type 1050 System.

For example, in some of the Service Centers and Resident Claim Offices such as Phoenix, Arizona and Ferguson, Missouri, where administrative traffic was accommodated on the 1050 Inquiry Terminal, the terminal required the paper tape punch and paper tape reader as additional hardware. This would permit the terminal operator to prepare administrative messages off-line and then send the message via the paper tape reader. This permitted messages to be sent at the reader speed rather than at the operator speed.

As mentioned earlier, during this era as we were being introduced almost monthly to new teleprocessing enhancements, we did install the IBM Type 2740 communications terminals for Inquiry Network stations in those Claims Service Centers which had a considerable volume of claims inquiries but a relatively low volume of administrative message traffic. In that type of an environment, the TWX (Teletypewriter Exchange) continued to be used for administrative message purposes.

The Type 2740 was also used in combination with the Type 1050 system in those regional offices (most of them) which required a number of claims inquiry terminals but only one terminal with paper tape capabilities for which a single Type 1050 System served that purpose. A few larger offices required two 1050's and many 2740's. There was a combination of reasons for the use of the 2740 terminal:

1. Being basically a Selectric-like typewriter terminal without the paper tape capabilities, it was to our advantage to use the Type 2740 as a Inquiry Terminal for claims inquiries and also with the flick of a switch use it at other times as a regular Selectric typewriter in those claims centers not requiring round-the-clock use as a claims terminal.

2. In most regional offices, the volume of the Administrative Network was such that one Type 1050 with paper tape capabilities was sufficient. However, nearly all regions required a number of terminals with claim inquiry capabilities for which the Type 2740 was ideal and was useful as a regular up-scale typewriter. Both the 1050 and 2740 terminals were Selectric-like typewriter terminals (CRT terminals came later) with "response" typing speeds of 14.8 characters per second.

3. In many Claims Service Centers the 2740 was a cheaper inquiry message alternative because it was less expensive via rental charges or outright purchase than the 1050 system even in combination with the TWX message system for administrative messages. (At that time, 109 Claims Service Centers continued to use only the TWX Teletype System because of the very low volume of both inquiry and administrative type messages. TWX charges were based on dial-up telephone line charges only for the time in use and therefore quite inexpensive.)

By now it must be quite clear that although we have not yet explained the much more complex Zone/Telpak system, these networks were not only revolutionary at that time in our data processing history, they were also very difficult to install. This difficulty stemmed from the need for flawless coordination of the decisions affecting our many regional and claims offices, the timely receipt of the equipment at those offices, the preparation of the lines by AT&T, and the concerted effort required by the several departments within the Home Office and regional offices which were required to assure a successful installation of multiple Administrative and Inquiry circuits making up the entire Countrywide Teleprocessing System.

Not only were these networks difficult to install, for many they were also difficult to understand. Let me therefore attempt to clarify this project by reiterating that the entire package included two major projects: the Countrywide Teleprocessing System and the Zone/Telpak system. The Countrywide Teleprocessing System was composed of the Administrative Network and the Inquiry Network. They were installed in an overlapping time frame but the basic sequence was that the teleprocessing networks were installed first followed by the Zone/Telpak networks, yet to be discussed. However, as each successive network was implemented, it had a profound effect on the existing networks because of the rapid and continual improvements being made both in the equipment as well as line configurations. This fast-changing environment caused us to configure a number of networks on the "drawing boards" for everyone that was finally adopted. For example, see Figure #3 for the line configuration for the two teleprocessing networks as initially proposed. Then compare it with the two separate network line configurations identified earlier as Figures #1 and #2. You will notice considerable differences caused by demographic changes as well as new equipment capabilities.

State Farm's Zone/Telpak System

It is an almost irrefutable fact that the success of any organization is in direct proportion to its planning process. That is infinitely true about the entire State Farm organization and especially true about its advent

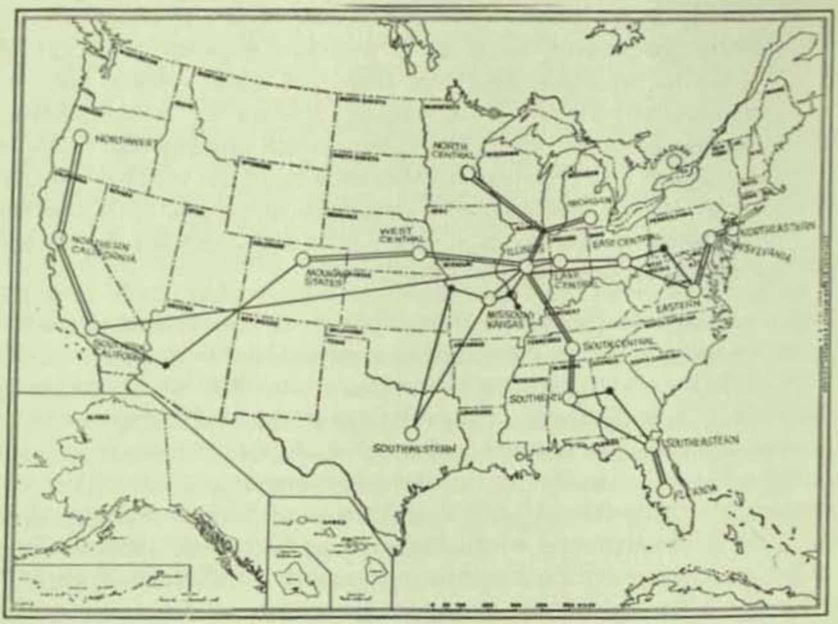


Fig. 3. Line configuration of Teleprocessing Networks as originally proposed.

into the many large-scale computer and data processing ventures. It was also the "backbone" of its steady progression toward its goal of the revolutionary Real Time System. As stated earlier, this goal was achieved through a progressive series of planned steps toward that goal: the National Teleprocessing System (just described), the Zone/Telpak System (to be described), and the Real Time System (the subject of Chapter VI).

In order to understand the need for this progression of large data processing innovations, it may be helpful to review the basic State Farm organizational structure and its corresponding needs of that time.

In 1968, State Farm, operating under its long-established decentralized mode, opened its 22nd regional office, the Mid-South Office in Monroe, Louisiana; and, it was in the process of organizing its 23rd regional office, the Westlake Village Office near Los Angeles, California,[77] to be opened for business in 1969. At that time, each regional office was responsible for servicing an average of 520,000 policies in force with the smallest number by the Canadian Office of 180,000 to the largest by the Texas Office of 790,000 policies. These offices were staffed with an average of about 820 employees per office. This represented approximately a total of 11 million policies in force handled by an employee staff of less than 20,000 countrywide. Data processing was still operating under the 1400 System but the 1400 series computers had been replaced with IBM 360 series computers operating in an emulated mode using those same 1400 System programs. That was the basic operational environment in 1968 as we were formulating the Zone/Telpak System concept.

The Countrywide Teleprocessing System was already operational and we were in the midst of a full scale research program assessing the potential for high-speed wideband communication lines between regional offices and between those offices and the Home Office Data Center. On October 28, 1968 after an all day meeting with Marquardt, we finalized and confirmed previous tentative decisions to implement the high-speed Telpak lines so that we could send and receive all teleprocessing messages over one set of lines and one type of teleprocessing equipment, the IBM Type 1050 Systems. In this meeting we also finalized the decision to use the IBM 360/40 System, housed in the Home Office Data Center, as the Communications Control System for both the teleprocessing and Zone/Telpak Systems.

We were fully aware through our planning process that a system of that nature and magnitude would be quite useful as part of our planned Real Time System and probably would be obsoleted later by that same system. (The Zone/Telpak system which emerged from this research project did become obsolete as a result of the initiation of the Real Time System and State Farm's continued tremendous growth. Ironically by 1973—about the time that we had planned to have the Real Time System in full operation—the Real Time System itself through a basic conceptual change was converted into and renamed as the Delta System, which will be fully explained in Chapter VII.)

The basic data processing operational system in use in all regional offices except Canada was the 360/Model 40 computer, which processed the daily transactions and wrote them onto magnetic tape for the printing of the many forms and reports by the "slave" 360/Model 30 computer. Because the computing power of the 360/40 greatly exceeded the power of the 1410 computer which it replaced, our calculations as early as 1966 revealed that we had considerable unused computer power available in each regional office which we felt was too costly to ignore. Hence, we prepared a proposal titled "Proposed State Farm Zone/Telpak System", published on April 26, 1966, which set out a plan for the implementation of a new concept that would efficiently use this immense collective 360/40 unused power. That plan proposed using that excess power,[78] which was dispersed throughout the regional offices, by utilizing AT&T's powerful new high-speed wideband data transmission lines. With the interconnection of regional offices into zones via the wideband lines, named by AT&T as their Telpak System, we could process the work of two or more regional offices, linked together with a Telpak line or lines, transmitting data from computer to computer.

The Telpak line speeds were at the rate of 19,200 bits per second. When this was converted to the conventional measurement of that time, words per minute, that translated into approximately 24,000 words per minute as compared to the maximum rate of 100 words per minute on the previously described Western Union "torn tape" Administrative Network. That was a new transmission concept and was considered extremely fast compared to the common transmission experience of that era.

The fundamental concept was to group selected regional offices into zones for data processing purposes in order to utilize the greater speed, capacity, and efficiency of the new IBM 360 computer and thereby significantly reduce the total data processing costs. That plan would equip one of the regional offices within each zone, named the "Z-Office", with both a large computer (System 360/40) and a small computer (System 360/30), whereas the other regional office(s) within the zone, named the "Non Z-Office(s), would be equipped only with a small computer (System 360/30). It contrasted with the established configuration of two computers in each office. Thus, a zone of three regional offices would require only four computers (one Model 40 and three Model 30's) instead of the six computers then servicing those three offices.

Shortly after we had completed installing the last of the 1400 Systems in 1965, we had already planned to replace the two 1400 System computers with the new 360 Systems. As we began to replace the 1400 Systems, we also could see further benefits in the Zone/Telpak System which we were formulating. As the 1400 Systems were being replaced, the program called for each regional office, except Canada which initially would retain its card-oriented 1460 computer, to be equipped with two emulated 360 computers, one model 40 and one model 30, and a yet-to-be decided large computer for the Home Office Data Center. Those two regional 360 Systems would emulate the two 1400 System computers previously in use, thereby circumventing a complete revision of the 1400 System programs allowing us to use the 360 Systems merely by the hardware conversion. Even though they would operate in the emulated mode, which reduced their power somewhat, those 360 computers in that mode still were much more powerful than the 1400 computers which they would replace. That was the system under which the regions were expected to operate until the Zone/Telpak System was devised. (Remember, we said earlier that data processing at that time was changing quite rapidly!)

Zone/Telpak Explained to Regional Vice Presidents

Because a plan as extensive and potentially intrusive as this plan could be for the orderly processing of daily transactions by the regional offices, especially when considering the massive changes that these offices had already endured within that decade, it was important that this system be explained carefully and fully to the regional vice presidents as to its importance to their respective offices and what they could expect from such an important move.

We knew the Regional Vice Presidents generally would want to know three important bits of information:

1. How will it work and who has the ultimate control under this concept?
2. Can we maintain our principal objective of policyholder service and satisfaction?
3. How much does it save State Farm?

Inasmuch as the answer of all three questions were interwoven, the first two had to be addressed effectively as soon as we saw the potential saving of unused computing power. We established our estimated savings on the basis of how well we could answer the first two questions ourselves as we designed the system.

We answered all three questions by beginning with the savings potential. So what savings did we estimate from this project for State Farm? With each Z-Office equipped with a 360/40 and a 360/30 and the Non Z-Office(s) within the zone equipped only with a 360/30 computer, we eliminated a 360/40 in each of the ten Non Z-Office(s). The total system with ten fewer 360/40 computers reduced our overall processing costs substantially. We estimated the yearly companywide savings from the reduction of computer rental at nearly $2 million. However, with the increase in line and other costs, the net savings were estimated at over $1.9 million per year.

This net savings was based on the comparison of the cost of the 360 Emulated Systems as originally planned versus the costs of the 360 Emulated Systems and Telpak costs under the Zone/Telpak concept. The initial plan would have required twenty Model 40 and twenty one Model 30 computers whereas the Zone/Telpak system required only eleven Model 40 and twenty one Model 30 computers. These totals exclude the Home Office Data Center because those costs would have been virtually the same under either plan. Our calculations also included some line savings for the Administrative and Inquiry lines between the offices within each zone because they utilized the Telpak line availability when not in the Zone/Telpak mode for the offices within that zone. A Canadian Office saving accrued from a reduction in operating costs merely because the Zone/Telpak system permitted Canada to operate under the 1400 System concept for the first time.

All computer costs listed below included any additional use rental costs (for overtime) and any state and local taxes assessed by the various states.

The detailed computation of those savings is as follows:

	Initial Plan		Zone/Telpak	
Cost Items	Monthly	Yearly	Monthly	Yearly
Computer costs	$651,525	$7,818,300	$454,854	$5,458,248
Telpak lines			45,300	543,600
Communications Equipment			11,429	137,148
Total Annual Costs		7,818,300		6,138,996
Basic Annual Savings				1,679,304
Additional Savings:				
Teleprocessing Network Savings			4,240	50,880
Personnel Readjustments			13,602	163,224
Canadian Office Savings			6,650	79,800
Total Estimated Savings				$1,973,208

The actual savings from this system was hard to measure. It could well have been substantially less or somewhat more. For those Regional Vice Presidents, the fact that we might save nearly $2 million companywide could well have been secondary to the loss of control over their own transaction processing, particularly in the Non Z-Offices which were to lose their 360/40 computers. The processing work of the Non Z-Offices was scheduled to be sent by wire to those offices retaining their 360/40's, the Z-Offices. Those and many other changes, including important questions concerning possible processing and transmission problems were in the minds of the Non Z-Office regional vice presidents primarily and they had to be addressed. After all, State Farm's first priority, as stated often in this book, was policyholder service above every other concern or cost saving potential.

As a result of the publication of the Zone/Telpak proposal in April, 1966, and subsequent meetings with corporate management, we knew that we had the support of top management and therefore enlisted that support in explaining this Zone/Telpak System to the many corporate users as well as the regional users about the intricacies of this system.

We arranged to meet with Regional Vice Presidents in three separate meetings. These were one-day meetings held in Pittsburgh with eastern RVP's on June 20, 1966, in Denver with western RVP's on July 11th, and in Chicago with mid-western RVP's on July 20th. Robert Noel, Vice President-Operations and CarL Marquardt joined Arthur Dierkes and myself in explaining the Zone/Telpak System at some of these meetings. My records indicate that Marquardt missed the Pittsburgh meeting because of his father's death and Noel attended only the Chicago meeting. These were very productive meetings discussing the details of the proposed zone/Telpak System and how it would impact each regional office.

As I recall those meetings, reaction was generally receptive but those offices which were scheduled to be Non Z-Offices were naturally less enthusiastic as might be anticipated because of the loss of direct control of the larger computers which were to be under the control of the Z-Offices. It was learned later that this response was even more varied among the Data Processing Managers, especially those managers from Non Z-Offices. This was a natural response expected by those of us who had the task of explaining this operational concept. In fairness, some Regional Vice Presidents at those meetings took the view that whatever was good for the company was also good, at least acceptable, for them. That certainly was refreshing!

The Zone Configurations of the Zone/Telpak System

The underlying plan provided for eight zones. Two zones included one Z-Office and two Non Z-offices per zone. The other six zones included one Z-Office and only one Non Z-Office per zone. Three of the largest offices, i.e. the Illinois Office, Southern California Office, and the Southwestern Office continued to operate as independent offices. The Z-Offices and Non Z-Offices, comprising the zones were as follows:

Zone	Z-Office	Non Z-Offices
1	Pennsylvania	Northeastern & Canada
2	East Central	Eastern & Seaboard
3	Southeastern	Florida
4	South Central	Southern
5	Lake Central	Michigan
6	Missouri-Kansas	North Central
7	West Central	Mountain States
8	Northern California	Northwest

Again, within the very few years that this system was in use, the outstanding growth of these offices caused some important changes. Some offices grew so rapidly that the zones were altered or completely dissolved. My records do not divulge everyone of those changes but most zones continued to operate as indicated above until disbanded because of sheer growth.

Most of the two-office zones remained in existence as originally planned until disbanded. However, the two three-office zones, zones 1 & 2, within a year of their original installation had outgrown their capacities and were reorganized as three two-office zones. See Figure #4

Fig. 4. Initial Zone-Telpak Network as installed.

for initial Zone/Telpak Network. All zones were dismantled before the initial Real Time System was installed in the early 1970's.

To assure both Home Office and regional office managements that we had placed ample safeguards in this system should any one of the zones not operate as well or efficiently as expected, we provided for these fall-back alternatives:

1. We retained the 360/40 in the **Non Z-Offices** for at least one month after initiation of the zone to be sure that the system was working "as advertised". At that time, we were still operating under a procedure of leasing those computers directly from IBM or from Dearborn Corporation (or other corporations) on a lease-back contractual arrangement. That was an excellent principle for that time when easy removal, addition, or retention might have been required within a matter of days. Later we purchased some computers which would have made this process more difficult.

2. If the work load in the Z-Office exceeded the capacity of the 360/ Model 40, we again provided for these alternative solutions:

   a. Replace the 360/40 with a more powerful model of the IBM 360. When that potential need first surfaced as a result of our early research regarding the Zone/Telpak concept, we met with a special group of IBM representatives on December 28, 1966 to explore the potential of IBM's more powerful 360/

Model 50. The first announced delivery of the Model 50 was for the Bank of America in August, 1965.[37]

Our attention was directed to this computer when we began to explore the concept of connecting three regional offices together into a single "Three Office Network". No final decisions were reached on that day. The use of a 360/50 in the Z-Offices was never found to be necessary or appropriate.

b. Reduce the three-office zones to two-office zones, which we did do with Zones 1 & 2.

c. Eliminate the zones entirely by reverting back to the initial concept of a 360/40 and a 360/30 in each regional office. Ultimately, prior to Real Time, this is what we did company-wide, mainly because of our constant, substantial growth.

As we installed the high-speed wideband lines, we continued our practice of incorporating existing teleprocessing systems into the next higher level of teleprocessing expertise: in this case the incorporation of the Administrative and Inquiry Networks into the Zone/Telpak System.

The Telpak lines were made up of twelve voice grade lines working in concert when operating as wideband circuits (with the speed of 19,200 bits per second or 24,000 words per minute) or as single voice grade lines. We designed the Zone/Telpak concept so that all computer to computer transmissions would be accomplished at night when the two teleprocessing networks were not in operation. Conversely, the two teleprocessing networks required transmission availability only during daytime and early evening hours. Therefore, the wideband concept used all 12 lines whereas the Administrative and Inquiry Networks during the day each used only one of the 12 lines or two for the two networks. The savings explained earlier included the savings of the teleprocessing line costs between the zone offices since the Telpak lines absorbed that transmission responsibility, thereby eliminating the separate teleprocessing line costs between the offices making up each zone.

When the entire system had been installed and operational, there were some 1800 miles of wideband circuits, over 5800 miles of voice grade lines, and some 2200 subvoice lines (used primarily for the smaller claims offices), making a total of approximately 10,000 miles of teleprocessing lines in our total communications system.[77]

Operational Scheme of Zone/Telpak System

The intent of the operational scheme was for the 360/40 in the Z-Office (principal Zone-Office) to process the daily transactions through the numerous runs explained in Chapter IV (1400 System) and then transmit the output of the resulting magnetic tapes over the Telpak lines to the Non Z-Office (secondary Zone-Office). The Non Z-Office(s) then printed the daily forms and reports as if the magnetic tapes had been prepared within its own office. During the night, the day's input was read onto tape, edited, and transmitted to the Z-Office in time for processing on the 360/40 during the next day. The actual transmission of data between the two offices was from the 360/30 computer in one office to the 360/30 in the other office(s). This cycle was repeated each day with the input initiated in the Non Z-Office, transmitted over Telpak to the Z-Office, processed in the Z-Office, and transmitted back to the Non Z-Office(s) for printing and dispersal to its Operating Divisions for further clerical processing and mailing of forms, notices, and reports.

The time frame was generally around 8 PM, dependant upon the synchronization agreed upon between the sending and receiving offices, at which time both offices would switch from the single line concept for the daytime teleprocessing transmission to the use of the 12 lines as the wideband circuit of the Telpak System. From that precise hour, the transmission required the processed work from the Z-Office to be transmitted to the Non Z-Office(s) for printing of forms necessary for delivery to the Operating Divisions the next morning. Immediately, thereafter, the Non Z-Office would transmit the current day's transactions to the Z-Office for processing on the 360/40. After completion of the high-speed transmission, the switches again were set simultaneously via inter-office communication for teleprocessing network use the next morning. Among the zones there were local situations which caused some deviations from that sequence but they generally followed that essential pattern.

Obviously, the Z-Office also continued to process its own transactions and print its own forms and reports on its two 360 computers. The 360/40 in each Z-Office was also equipped with transmission capabilities as a backup system should the 360/30 break down or become overloaded with its printing or other processing chores. See Figure #5 for the wideband line configuration of the Zone/Telpak System which illustrates all communication lines for all networks in existence as one system during that era. That system was nearly complete by year-end 1968 and fully operational by July 1969.

IBM Reorganizes its State Farm Marketing & Consulting Team

Throughout the early eras of State Farm's adventures into the design and implementation of new systems, IBM played a very important role both as to the primary equipment used and the IBM sales and systems consultants who were of significant assistance to our staff. This was also quite true for the installation of the teleprocessing systems. During this Computer Era III, IBM made more than the usual number of changes in its State Farm team. Some of the most important were in its managerial personnel.

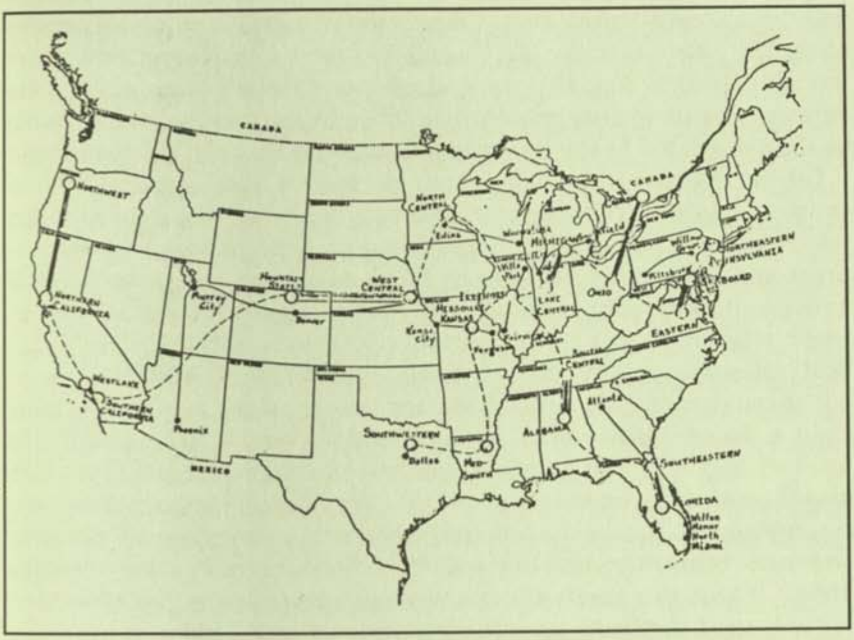


Fig. 5. Composite Network of all lines as installed.

In 1967, Mel Deener, who had been serving State Farm as Sales Manager at the time of his re-assignment, assumed another position in Raleigh, North Carolina, in an area known as the Research Triangle. However, John Henry remained on the IBM team as a Real Time consultant.

IBM also realigned its top management position in Peoria, naming Guy McMillan as Peoria Branch Manager replacing Horace "Hoot" Gibson as of December 31, 1967. Perhaps the change that affected State Farm even more significantly was the replacement of Glenn Reitzel, long time IBM Marketing Manager for State Farm, with Kent Savage. Reitzel had been the Marketing Manager in Bloomington since 1958, about ten years. Savage remained in that position for just over 1 year, leaving Bloomington in 1969.

As of this writing, Gibson is deceased; McMillan is retired and living in Ft. Myers, Florida; Deener is retired, residing in Raleigh, North Carolina; whereas, Reitzel is retired, living in New Milford, Connecticut alongside Long Island Sound. Savage is no longer with IBM.

IBM Dominance Forces Changes in Competitive Strategies

The IBM 360 Systems had been so successful that it forced changes in competitive strategies not only for its competitors but for IBM itself. It was not a great surprise that competition would take on new strategies given the sales success of the 360 Systems; but, it was even more troubling to IBM that this would result in a decade of more litigation stemming from an anti-trust suit initiated by Control Data Corporation in 1968 which led to the eventual involvement of the U. S. Government.

Let us examine the change in strategies first. Because of the considerable impact of the 360 Systems, the nature of the the industry was changed drastically.[2] A series of smaller firms grew and others were organized—a number of them by former IBM employees who saw an enticing opportunity. Among them were Electronic Data Systems, University Computing, and Comma Corporation—all founded by former IBM salesmen or engineers trained in Armonk. The 360's were so advanced that they assured IBM's domination of the industry for more than a decade. However, it became evident later that in altering its product line, IBM had helped accelerate those concept changes which would soon alter the shape of the industry. Those changes had as little resemblance to that of the first and second computer generations as the coming of computers had to the Electric Accounting Machine era of the 1950's. Within this computer era, not only was the government pondering anti-trust implications of the 360's impact on the industry but many new "high technology-based firms" were being established by academic scientists—some from the Massachusetts Institute of Technology and Harvard. Although, as is often the result of such ventures, many went out of business in a short period of time. A very notable exception was the Digital Equipment Corporation, (DEC),[2] founded by Kenneth Olsen and Harlan Anderson, both of MIT. After a very uncertain and rocky start and an infusion of additional capital, DEC has not only survived but became a very formidable competitor which it is even today. One of the ideas which paid off for the founders was to build small computers in an era when IBM and other major competitors were concentrating on large and medium sized computers. Obviously, that strategy has paid off handsomely for DEC.

Other firms, noting the success of DEC and others entering the small computer field, began building small computers for that competitive field which IBM did not enter until 1969 with its System/3. Among the more prominent firms entering the small computer market against DEC, which by now was the established sales leader, were Control Data Corporation, Scientific Data Systems, and Honeywell. Author Sobel argues that "IBM was less customer-oriented by the late 1960's than it had been in earlier periods."[2] Personally, I was heavily involved with IBM's customer strategies of that time and I must say I did not notice that change in our relationship immediately but it did become quite noticeable later. This change when it did become more noticeable possibly explains more about IBM's delay in focusing on the minicomputer and personal computer market until the 1980's and 1990's than it did during this period which I have named Computer Era III, 1966 through

1968. During this period IBM failed to move boldly into the minicomputer field which the Digital Equipment Corporation did at that time and other companies did in the personal computer markets. The result was that DEC and other competitors achieved a foothold in those markets which IBM could have dominated, in retrospect, as is was dominating the main frame market during that era. I believe that it was an error in judgment of the future direction of the industry which was the seed for the problems that are confronting IBM today in the early 1990's.[2] Sobel believed that had IBM made a determined effort in the minicomputer market of the 1960's, possible DEC, Data General, Honeywell, and the others would have had the leftovers for their markets. I am not ready to endorse that theory entirely because I remember the entry of these firms into the minicomputer market as one of a strong entrance, especially DEC and Data General. However, I do believe that IBM's strategy of that era really invited today's challenges. It has turned out that the minicomputer and now the personal computer markets are becoming more important than the major systems markets ever were or so it seems.

In fact, just how important IBM's decision may become is not entirely known yet! As Sobel says, "In retrospect, the failure to act more promptly in this area may turn out to have been Watson's greatest error in business judgment." While this was one of the most serious competitive events which faced IBM during that era, it was a challenge which did not change IBM's strategies as much as did a subtle change caused by IBM's management perception that the IBM salesman was to be less important in the future than the need to adapt the new technologies of the period and incorporate them into their new computer lines. This change in philosophy seemed to be an important strategy difference between Watson, Jr. and his father, who stressed the importance of the salesman. This change in strategy resulted in IBM placing more emphasis on pioneering technological innovations than it had in previous computer generations. However, in my opinion, IBM's greatest challenges in that era which merely began to surface, and which were to become quite important in the next decade, were the anti-trust challenges. Its mistake in assessing the market incorrectly did not become serious until more than a decade later.

Control Data Corporation Initiates Anti-Trust Action[79]

During the early years of the computer competition, the rivalry between computer manufacturers was quite strong but gentlemanly, reminding me of the skirmishes between early English gladiators wearing "shiny armor" and who fought battles between individual gladiators. To carry this analogy a step further, those gentlemanly encounters eventually and gradually became "computer wars" as surely as those early battles between gladiators eventually became great wars between vast armies as was common in the twentieth century.

During this Computer Era III and particularly in the 1970's, these polite battles became "legal wars", often resulting in many years of litigation. Those "wars" resulted in battles between armies of lawyers instead of individual gladiators on horseback. Those "wars" were fought in the courts between computer manufacturers at the beginning but soon evolved into antitrust suits by the U. S. Government. One of the most costly and lengthy of these litigations involved an antitrust suit by the Department of Justice against the IBM corporation. Significantly, that protracted battle was begun in 1968 by the Control Data Corporation when it filed a private antitrust suit against IBM.[79]

CDC had an apparent ulterior motive when it brought suit against IBM. That motive appears to have been to slap the wrists of the U. S. Government as much as it wanted to slap IBM. CDC in its suit alleged that there were a number of serious violations of the consent decree entered into by IBM and the government's antitrust division in 1956. The mere filing of the suit implied that the government was not monitoring the computer industry as it should have under the agreement reached in the consent decree. It is believed that CDC may not have gone to court had the U. S. government monitored the industry to the satisfaction of the Control Data Corporation.

Some of the key allegations of the suit, in summarized form were:[2]

1. IBM sought a monopoly status in the industry.
2. IBM discouraged new companies from entering the computer field.
3. IBM had advertised and sold "paper machines and phantom computers" in order to dissuade customers from ordering the CDC 6600 Computers and similar large computer systems.
4. Complaints against IBM's advertising campaigns, and against IBM salesmen for applying unfair competitive tactics.

IBM denied all of the above named allegations with a very spirited defense and pointed to its pamphlet "Business Conduct Policies: Responsibilities and Guide" which spelled out the conduct in the field that the salesmen were expected to follow. Among many of its rules, two of the most significant were that salesmen were not to undertake overtly illegal practices and to avoid doing anything which "may create a pattern of apparent monopolistic practices . . . "[2]

After several years of fact finding and jockeying back and forth between the two companies, in 1972 IBM retaliated with its own two counter suits against Control Data Corporation. The first suit charged CDC as a participant in an international cartel involving companies from Great Britain and France. The second suit, filed shortly thereafter, hit at the very heart of CDC's primary business, the super computer arena, charging CDC of endeavoring to monopolize the large computer systems market.

By late 1972 and early 1973, IBM was beset with an increasing number of lawsuits and, yet, apparently was going to pursue its problems with CDC to the very end. With both companies in this mood, in January 1973 the two adversaries reached an agreement which was announced simultaneously.[79] While it appears that CDC may have won its legal battle with IBM, IBM apparently gained an edge in the other areas of its antitrust battles. For example, while IBM agreed to divest itself of its Service Bureau Corporation, it was doing so with a division of IBM that it really did not need. Meanwhile, as a result of that settlement, CDC became the leader in the service bureau industry.

The result of all of this legal activity was that the size and magnitude of the CDC suit led almost directly into the very important, time consuming, and costly antitrust suits by other companies and ultimately the U. S. Government which I will discuss in Chapter VII.

Meanwhile, with IBM's primary business being the manufacture and sale of computers, it was surely setting the computer standards for the industry with it aggressive leadership via the sale of Type 360 systems and its behind the scenes design and development of its "NS" systems which were to become the newer 370 systems. That story will be developed in the next chapter inasmuch as the 370 System was not announced until 1970.

Preparation For Real Time

It is probably quite evident to you by now that the development of new systems at State Farm, either by coincidence or design, was closely aligned with the new innovations, power, and concepts introduced by IBM in its newest line of computers. This was particularly true at that time when IBM was the undisputed leader and "standard bearer" Hence, as we learned of the advances to be announced "some day" of its newest system, introduced later as the 370 System, we moved into "high gear" with our preparations for the Real Time System particularly since we had already announced it in 1965. The system design was so massive and complex that we did not comlete the principal design objectives until the next computer era when we published the detailed objectives and began actual system installation on a test basis.

Although we had been quite busy throughout Computer Era III designing and implementing the teleprocessing systems described earlier, a sizeable number of our EDP Research personnel were working on the development of the Real Time System concepts.

Although those concepts had been explained to the State Farm management in 1965, on October 15, 1966 we began the serious work of designing and/or determining the fundamental characteristics, the types of equipment needed, and the transaction input/output requirements of the system. We also began the very important aspect of identifying the people impact the system would have on both the corporate general departments and regional offices. In fact that was the opening "shot" of a project that would culminate eventually in the Delta System which would become the successor to the Real Time System in 1973. As we entered the year 1967, we were in the midst of exploring all large computer systems to determine their attributes as the possible central control processor for the Real Time System in comparison with the IBM 360 Systems with which we were quite familiar. As a consequence of that exploration, Woodrey and Willke visited the National Cash Register Company in Dayton, Ohio to study and evaluate the newest NCR computer line as a possible contender for that role. After spending a number of additional months studying many other large computer systems, we made an extremely careful and objective comparison of all facets including speed, power, reliability, maintenance support, programming ease, corporate stability, corporate ability to provide the large number of computers needed in our system, and costs. We decided that the IBM computers excelled in nearly all of those facets and therefore chose IBM even though costs were the one area where NCR competed quite well.

On May 2, 1967, EDP Research, with the very significant leadership assistance of Woodrey and other analysts, completed the design of the very first element to be formalized for the future Real Time System—the control system. That system was designed as the "power plant" for the processing facilities of the Home Office DP Operations, data processing program testing, and the inherent teleprocessing network. That was only the beginning of a project that would take years to complete. The project included system specifications whereas previous work had been only conceptual.

By September 19, 1967, after having examined all of the various contenders for that significant role as the Central Control System as well as the lesser computers needed for the entire system countrywide, we arrived at the decision to remain with IBM. State Farm Mutual signed an order for $4 Million of Real Time System equipment with IBM to be delivered in the period of 1970-1971. This included computers, inquiry stations, CRT Display units and other similar equipment. (This order was later changed as the initial timing for implementation of the system was delayed and subsequently delayed even further as the direction of the concept was altered by the Delta System decision.)

As we were approaching the end of that era and were heavily involved in the technical aspects of Real Time preparations, we were getting "feed back" from the regions concerning the future of the "people side" of the Real Time equation. That concern stemmed from the comprehensive technical knowledge that the regional offices perceived as a requirement for their data processing personnel. They particularly wanted to know how well their personnel would fit the requirements that they felt were going to be thrust upon them. To answer this, Marquardt provided them with some of the philosophies regarding those people requirements as we saw them. Let me quote from one of his speeches about that subject given at a Home Office meeting of regional management personnel in October, 1968:

> "It seems to me that some of you are more concerned with how people fit than how much or how effectively they contribute.
>
> "Teamwork and cohesiveness in State Farm are essential. Team effort, if genuine, emphasizes the unique talents of each individual, meshing them together into something greater than the simple sum of the parts.
>
> "I am concerned in what could be called our inability to provide effective leadership in a bigness-oriented climate where we deal with virtually everything on a gross basis . . .
>
> "A basic objective of Management is to provide maximum prosperity for the employer, coupled with maximum prosperity of the employee.
>
> "A Data Processing Superintendent in State Farm is a special type of administrator. He is one who should be "Yes" as well as "No" oriented. He is one who should reflect more concern with people than with things. He is one who should look toward tomorrow instead of at just today. He is one who should have a sense of loyalty and recognize an individual's part that contributes to a truly efficient operation.
>
> "The ultimate determinant of business ability will be the men and women who have the professional training, the professional credentials, and more important—the professional attitudes; those who have the ability to adapt and to learn—those who have the demonstrated capacity for change."
>
> (Let me interject that this was delivered in an era when the work ethic everywhere was tremendous with not the slightest hint that America was becoming a second-rate economic power or a period when we were losing our heavy and electronic industries to Japan or Europe. Europeans and Japanese were coming to America to get ideas rather than the other way around as it is today. I firmly believe that America will again reach that top position but only after it applies itself again as Marquardt suggested.)

While applying the kind of work ethic that Marquardt expected of us in EDP Research, as 1968 came to a close we reached those important milestones of knowing the critical specifications of the system design and the computers that were going to power the system. We spent the remainder of that era writing those specifications and final design concepts as well as doing a significant portion of the programming in preparation of the Real Time Era from 1969 through 1972.

Other Important Events Occurring in Computer Era III

While the above subjects were the primary events that kept those of us in EDP Research extremely busy, other important events, some interesting but unrelated, were occurring which we have merely enumerated to give you a further "flavor" of the era:

1. Again we had visitors who arrived on May 3, 1966 from France: Jean Barroux, an old friend of the company along with Robert Montilivet, and Robert Villain, who represented IBM France. Barroux and Montilivet were from Groupe Drouot, Paris, France. They were interested in the design specifications of our new Teleprocessing System.
2. The EDP Research budget as prepared on 8-26-66, exceeded $1 million for the first time in our existence at $1,150,000. That expenditure was primarily for the 65 persons (and constantly growing) in the division along with other supporting expenses such as computer test time, etc.
3. In September 1966, one of the "hot" items being explored were studies being conducted about how best State Farm could establish Mutual Funds for the company in a computerized system. During the period of September 11th through the 13th, James Mack, Claire McDaniel, Robert Deems and Willke visited the State Street Bank and Trust Company of Boston as well as the Investor's Diversified Services of Minneapolis to learn about their respective systems.
4. Another issue of importance was the newly flourishing Optical Scanning Systems. Over the two day period of September 20-21, 1966, Reitzel, State Farm Account Manager, and Willke visited the IBM Optical Scanning research installation in Baltimore, Maryland and the IBM laboratory at White Plains, New York. Those visits were the beginning of Optical Scanning research that EDP Research continued to pursue into the 1970's. Five days later, representatives of the Sanders Corporation explained the attributes of their optical scanning units to us. It was an increasingly vibrant issue.

   Additional research included a visit by Willke to the offices of Recognition Equipment Inc. in Dallas, Texas to review the advancement of the optical scanning technology since our earlier visits in 1967. In July, 1968, Kent Savage, the new Marketing Manager for IBM arranged for our first opportunity to view the new IBM 1288 Optical Scanner in the IBM Office in Chicago. During the 1970's, the

IBM 1288 scanners were installed within the State Farm regional offices as the first operational scanners ever installed within State Farm Mutual.

5. On November 1, 1966, we met Messrs. Tanaka and Makuda of Tokyo, Japan, who represented the largest insurance company in that country. They visited us first, among a number of companies within the USA, to study and learn about our data processing systems and most importantly how we went about constructing large systems such as our future Real Time System.

6. On February 24, 1967, according to the ALFI NEWS of that date, Vernon Switzer was "named to head a newly-created actuarial function of the Medi-Ca$h Department." Switzer has informed me that the Medicash concept was begun in 1965 and was transformed in 1971 into what is known today as the Hospital Insurance Policy. Hospital insurance policies have always required significant data processing programming and transaction processing.

7. With the seemingly unending insurance problems of the 1990's, it may come as a surprise that there were also many serious similar problems in the late 1960's. In early March, 1967, President E. B. Rust, Sr. was quoted as saying there were "many insurance industry problems involving pricing problems, general marketing problems, traffic safety problems, driver licensing problems, auto inspection problems, insolvency problems,[67] innocent victim problems, tort liability problems, assigned risk problems, state regulation problems, flood problems . . . " Sounded like the 1990's came early! Yes, many of our current problems are serious but by no means new. Many have been around for a while.

8. Future Data Processing Vice President, Dr. Norman Vincent, then Asst. Vice President-Agency, served on an Illinois Psychological Association panel at a dinner meeting in Chicago on March 2, 1967.

9. Royal Bartrum, Vice President-Claims and Charles W. Cox, Asst. General Claims Superintendent, announced in early May 1967, that State Farm expects to have 100 Claims Service Centers by 1970, after having been introduced as a concept in 1960. However, the first Service Center placed in use as a company-owned center was opened on February 19, 1962 at Villa Park, Illinois.

10. An announcement was made on May 16, 1967 that EDP Research had two new Directors: Andes as Director-Programming and Woodrey as Director-EDP Research. Gentes was named Director-Methods & Procedures in the Methods & Procedures Division of Service & Systems.

11. On June 5, 1967, we had our first ever visitors from an Italian insurance company, named "Italia SAT Insurance Co.", who stud-

ied our data processing system and inquired about our future Real Time System concepts. The visitors all had Ph.D. degrees: Drs. Balldozzi; Patrovich; and, Dettasam. This visit by a group of Italians, not especially noted in Europe for there insurance expertise in 1967, was evidence that we had the attention and a pioneering reputation among data processing organizations around the world.

12. A new, very interesting book published during that era, which had absolutely no direct connection with data processing, nevertheless, had the men and women of EDP Research "buzzing" about it: Amy Vanderbilt's "Complete Book of Etiquette" published in 1967.[68] It had some surprising rules, even for 1967. A few of its rules were:

    1. "A 'Business Man' always wears a suit, never a sports jacket and slacks.

    2. "A suit, if single breasted, must be accompanied by a vest.

    3. "Color selection is very important. 'Don't choose a pattern or plaid that doesn't fade into a solid color at a short distance.'

    4. "If you wear suspenders with a single breasted suit, don't remove your coat."

    I will let each of you reflect on those rules in your own way in terms of the current "bent" for casual attire and philosophies.

13. Late in 1967, on November 13, Laura Cisco (nee Randolph), my secretary for a number of years, resigned in order to spend more time as a homemaker. Twyla Erickson, who had been an employee in EDP Research in another capacity, became my secretary for a short period of time when on January 31, 1968, she resigned from State Farm and was replaced by Delores Blickensderfer. I had mentioned earlier that Delores (Dee) was my very first secretary and after a few years absence as homemaker and mother, again became my secretary and remained in that position until my retirement in 1980.

14. EDP Research held its first and only dinner dance (exclusively for EDP Research personnel and their partners) at the Illinois Hotel on December 1, 1967. A combo from Illinois State University provided the music. Thirty two couples attended with the "high drama" of the evening being the surprise wedding announcement of fellow EDP Researchers, Carole Crockett and Al Furst. The wedding had been solemnized after work in complete secrecy and before the dance at a private ceremony and was therefore not only a complete surprise but a real shock to all the dancers. Larry Kimmerling, as I recall, the dance chairman, made the evening complete by purchasing a wedding cake which was shared by all in attendance.

(When I spoke to both individuals about this event recently, they both remembered it as an hilarious surprise and were happy about my sharing it with you.)

15. Senior Vice President-Claims of State Farm Mutual, Fletcher Coleman, passed away unexpectedly at his home in Bloomington, Illinois on December 28, 1967.[69]

16. The Life Company, in its year-end report for 1967, announced that it had surpassed $5 Billion of ordinary life insurance for the first time in its history. It was organized in 1929. Its goal had been $ 3.75 Billion by 1970 which was surpassed in 1966.

17. Employee count for the EDP Research Division of the S&S Department on December 31, 1967 had reached a total of 105 employees in EDP Research alone. This was a growth of 39 additional people in the last 15 months when the count stood at 66 employees in our division. That was the fastest growth pattern we had experienced over the history of the division to that date.

18. Edward B. Rust, Sr., in March, 1968, was re-elected to a 2-year term as a member of the Board of Directors of the United States Chamber of Commerce.

19. One of the newest concepts being studied in 1968 was the potential of magnetic tape data recorders as a replacement of key punch machines, which we did replace during that era. On July 23, 1968, EDP Research arranged for the Sangamo Electric Corporation to demonstrate its tape data recorders in the Auditorium on the 13th floor of the Home Office (now the Fire Building).

20. On the following day, July 24th, we discussed the merits of the competitive Ampex tape recorder with the Ampex Corporation sales representatives. Later that day we also visited with the Control Data Corporation about their Cathode Ray Tube (CRT) Visual Display units as possible appendages to the future Real Time System. (At that time we were quite busy making important equipment decisions for the Real Time System which was expected to be installed on a test basis in less than two years.)

21. As I look back at that era, it seems strange how important it was for us to have individuals attend national data processing meetings and conventions. Remember, data processing was still a rather new and "adolescent" profession which made it quite important to be "chosen" to represent State Farm at one of those events. In the very earliest years, Marquardt often asked me to be State Farm's lone representative. However, in 1968, we still asked only a very few individuals to represent State Farm. Therefore, it was quite significant, both to State Farm and the individuals selected, to

attend a meeting of Guide International, a very respected international data processing organization. On October 29, 1968, the three State Farm representatives attending the Atlantic City meeting of "Guide" were Roger Woodrey, Kenneth Reeser, and Richard Wadley. Currently Woodrey is retired, Reeser is an Assistant Director in Corporate Data Processing, and Wadley is Deputy Regional Vice President of the Westlake Village Regional Office in California.

22. Another very important source for technical assistance in designing and implementing the early teleprocessing systems were the management and consultants from the GTE Corporation. Among those especially helpful were Terry Desmond, Assistant Manager, General Telephone Company, located in Bloomington, Illinois. Desmond, after several years of important assistance to our State Farm teleprocessing personnel, was reassigned as State Farm Account Manager and replaced by John "Jack" Dale on October 30, 1968.

23. Late in that era, on December 13, 1968, we again were hosts to another group of Europeans eager to learn about a different facet of our data processing systems, our computer communications systems. Stephen Feldman, a computer executive with the General Post Office of England, visited our division to learn about our research and implementation progress of our recently announced communications systems. At least, Mr. Feldman proved to be the last European visitor of Computer Era III.

As we reached the end of Era III, not everything was as rosy as we had hoped. Some of these problems stemmed from program changes as well as program and communication errors involving users both within the corporate headquarters and the regional offices.

Some of the more significant changes and problems were:

1. We were experiencing too many problems from last minute changes placing more pressure on our analysts and programmers which resulted in more errors. This stemmed from too much application of the work ethic of that era which was an attempt to do too much with too few.

2. We were experiencing too many simultaneous changes for our Master Program "decks". My records indicate we were making great strides but still were having too many changes occurring at the same time. We were in the midst of getting a handle on this problem.

3. We also felt at that time that our controls that had been established for our Master Tape Records (policies and policy data) were inadequate and therefore we made a concentrated effort to improve those controls.

4. We were in the midst of developing area specialists in the programming groups to improve the coordination and implementation of changes as they affected our regions.

5. Our computer assembly process was too time consuming which prompted us to examine different assembly concepts.

As you can see from that list, even though our employees were energetic and hard-working, we faced serious problems which we tried and most often succeeded in correcting. However, I did not want to leave the impression that our accomplishments were not at a price for our EDP Research personnel and our corporate and regional users at various times. (I had a motto which I had framed and placed on my book shelf in my office that addressed such problems and which at times I felt like destroying with my fist, which said: "Problems are not to be feared but welcomed as a challenge . . . " Unfortunately we were never devoid of challenges.)

EDP Research Management Structure

At this juncture, our organization facing those challenges was composed of 141 total personnel in the EDP Research Division, still a division of the Service & Systems Department. According to personnel records of late 1968, most of those employees were under the direction of Roger Woodrey, Director-EDP Research and Richard Andes, Director-Programming.

Reporting directly to Woodrey were Superintendents Robert Deems and Kenneth Reeser while Superintendents Donald Olsen and James Hickey reported to Andes. Superintendents Edward Doebbling and John Janes were on special assignments involving special programs, and research & development, respectively.

Assistant Superintendents reporting to those six superintendents in 1968 were:

Donald Bertram	Charles Cappis	Gerald Detloff
John Goergen	Gene Hetz	James Jones
Ronald Knipp	James Lucas	Merrill McCall
Wayne Miller	Ronald Parido	Edward Proctor
Thomas Rettig	Richard Tarter	James Weikel

Andes, Woodrey, Doebbling and Janes reported to me and I reported to Marquardt, who still headed the Service & Systems Department.

The other two divisions of Service & Systems were the Methods & Procedures Division and Home Office Data Processing Division, headed by Assistant Vice Presidents, Clayton Sturgeon and Arthur Dierkes, respectively.

While much of this chapter concentrated on the big projects that were requiring so much of our attention, I would be terribly remiss if I did not mention those hard working management and programming personnel working in the Programming Section under the direction of Richard Andes, Director of Programming. Our division remained divided at that time with the Research Section under Woodrey and the on-going day to day programming under Andes. Andes' personnel often had to solve the problems created by the new programs designed and built by the Research Section. They were both outstanding men with whom to work and on whom to place so much trust.

As we close out this chapter, let me point out that we remained located in Towanda Avenue Building (TAB) with a few units still in the Data Processing Center.

State Farm continued to grow at a record pace with around 20,000 total employees, over 10,000 agents, around 10 million policies in force, and the Life and Fire Companies both more than doubling their insurance volumes during this period. It continued to he a heady time for State Farm although storm clouds were forming particularly for the Auto Company which became quite severe during the next year, the year 1969.

Political Climate at End of Era

As we leave that era, within the country itself we were also closing out the presidency of Lyndon Johnson. We were heavily involved in a very controversial war in Vietnam which was a primary reason for Johnson's severe decline in popularity and his decision not to "run" again for another term as president. Richard Nixon became president defeating Hubert Humphrey for the presidency in what many contemporary voters considered as one of the closest elections ever held to that date. It may be interesting to discuss briefly the closest presidential elections in our history.

Actually the 1968 election was not even close in terms of the Electoral Votes and perhaps second closest in terms of the popular vote. (Obviously, only the electoral votes really count.) The closest elections in terms of the Electoral College were the 1800, 1824, and 1876 elections.

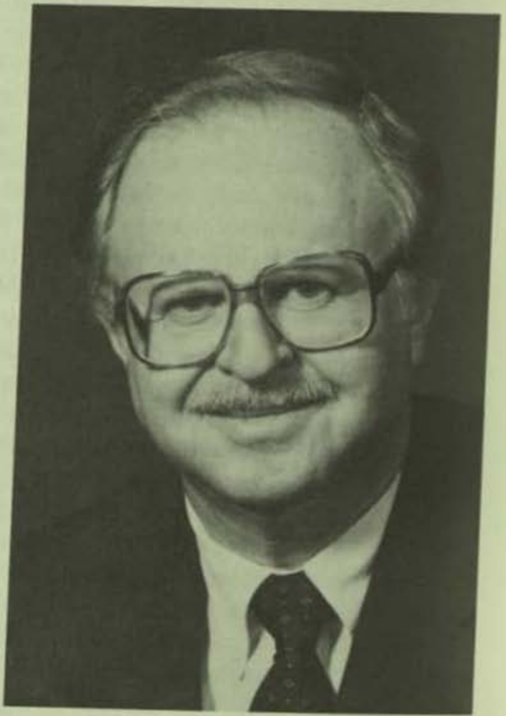
The 1800 election ended in a tie of 73 votes each for Thomas Jefferson and Aaron Burr. It was decided by the House of Representatives creating such a debate that Burr challenged Alexander Hamilton, an unlikely supporter of Jefferson, to a duel that ended Hamilton's life.

The second closest electoral vote was in the 1876 election when Rutherford B. Hayes defeated Samuel J. Tilden in one of the most fraudulent elections of all time.[81] Tilden had 184 votes and Hayes 165 votes. Twenty votes in four states were sharply contested. The impasse was finally settled by the "Electoral Commission of 1877" which was created by Congress. All 20 votes were awarded to Hayes, who then won by one electoral vote.

Perhaps the truly closest election might be the election of 1824. That election did not result in a clear majority between John Quincy Adams, Henry Clay, and Andrew Jackson. The election was thrown into the House of Representatives where Clay supported Adams in order to defeat Jackson, who had a plurality of electoral votes. With Clay's support Adams became the sixth president of the United States and that sequence of events should be called a "debacle", not an election.

The Kennedy-Nixon election of 1960 was also much closer than the 1968 election from the viewpoint of the popular vote, perhaps the closest of all time when a popular vote of only 119,000 plus votes separated them. The electoral vote was also closer than in the Nixon-Humphrey election. Oh yes, what about the "Dewey Defeats Truman" election? Truman actually won relatively easily with a plurality of over 2 million votes. So what was the margin of Nixon's victory? Nixon had about one-half million more popular votes and 110 more electoral votes. This again proves that general opinion often can be wrong. (As a student of the U.S. Constitution and especially the Constitutional Convention of 1787, our founding fathers never envisioned those problems, despite their very deliberative summer of 1787, because they never envisaged the emergence of political parties as we know them today.)

As we leave this rather paradoxical period of 1966 through 1968, during which we enjoyed one of the longest periods of prosperity in our history, we were also engrossed in a very unpopular war and an election which was rather hotly contested by combatants who might not have been in the election at all except for that war. In addition, State Farm was entering one of its most loss-ridden periods of its history as we shall see in the next chapter. So that was the general picture as we emerged from Computer Era III and entered Computer Era IV.



(Right) Roger Woodrey, Assistant Vice President — Data Processing.

(Left) Richard Andes, Assistant Vice President — Service and Systems.

E.B. Rust, Sr. and Staff discussing State Farm's new system 360 in a 1966 meeting.

IBM 360 — Model 40 — 1964.

CHAPTER VI

Real Time Processing

Computer Era IV — *"Complex Experimentation"*
(1969-1972)

Although much work had been done in previous eras on the thought processes, the design concepts, and preparations for the Real Time System, as described in previous chapters, the time to prove the value of those concepts and design had arrived in 1969. It truly was an exciting era for not only the data processing personnel throughout the company but for many of our top executives including our president, E. B. Rust, Sr., who was a strong supporter of this project.

However, the national economy and environment are two elements which are always an important "backdrop" for any extensive and costly introduction of a major systems change, such as the implementation of the Real Time System, in any corporation of the size of State Farm.

That fact was especially true in Computer Era IV because the Real Time System, later named the Delta System, would prove to be the last system to be installed as a massive and completely new system replacing *entirely* the existing system. See Figures #6 and #7 which illustrate why the Real Time System simply had to be the last such "complete" system overhaul as you will note the lessening of the concentrated impact but an increase in the installation longevity, therefore, an increase in the installation time and cost. Eventually, i.e. the current era, this graph shows the time line to be just a ripple meaning changes are in small, manageable segments. (Figure #7 is in Chapter VII.)

Remember, all of the previous systems ultimately altered the know-how and job requirements of nearly every person in an operating environment throughout the regional offices and the entire corporation in a relatively short time period. That would be especially true of the Real Time System as it would be the most comprehensive change on a "single thrust basis" ever attempted at State Farm. State Farm's growth simply made it too large for such an enormous processing change over a relatively short interval of time—therefore the last. Future changes would be scheduled gradually over a carefully planned time frame. From here on implementation of the Delta System and future systems would be accomplished in smaller and therefore more manageable components which were a natural result of the company's great growth

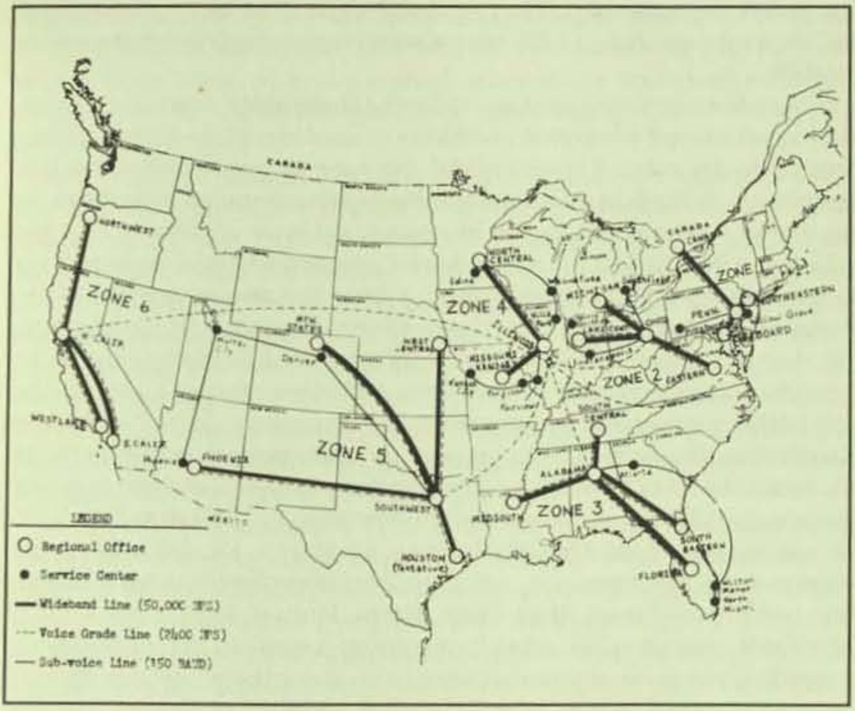


Fig. 6. Real time System Network as proposed.

and size. But the implementation of our large systems during the past eras were both difficult and exciting while it lasted.

Before we proceed, however, I believe it would be fruitful to explain the overall national and corporate environment, especially the national economy and corporate profit and loss picture, which existed at that time. With the inauguration of the new president, Richard Nixon, and the beginning of a new computer era, we find both the national economy and the corporate financial picture in a convulsive state. The country was still in the midst of the Vietnam War during most of the 1960's. After nearly a decade of prosperity and slowly increasing inflation, the country experienced a short-lived economic downturn during 1969 and 1970 with a moderate recession ending in October 1970.[103] During that period the inflation rate dropped from 6.2% in 1969 to 3.3% in early 1971.

By late 1971 we entered a strange period of undulating fortunes as inflationary pressures grew rapidly and became so great that by the end of 1971, Nixon had imposed sweeping price controls on a war-driven economy which saw the gross national product increase to $1,155 billion in 1972.[82] This extraordinary period of undulating prosperity helped propel Nixon to an enormous landslide victory over George McGovern in the election of 1972. However, Nixon felt uncomfortable with the price controls he had established in 1971, and shortly after the election he rescinded them partially. The country then headed for an even greater inflation rate reaching 12.3% intermingled with a fairly severe recession in 1974.

Somewhat unrelated to this but during those same years, State Farm was experiencing economic pressures of another kind—severe underwriting losses caused by a painful increase in loss severity and loss frequency. It had our corporate management quite concerned as evidenced by the article in the Bloomington Letter of October 10, 1969 which stated, "The cloud of the Auto Company's biggest underwriting loss in history cast a sobering shadow over the annual meeting of the regional vice presidents with Home Office executives in Bloomington October 6, 7, and 8." Today in the 1990's, we hear frequently about the need for "managed control" of medical and other costs as a cure for the 1991-1992 recession. By comparison, the "managed control" of the loss problem in the early 1970's by our top management was superb. To illustrate the severity of the problem and the energetic manner in which it was solved, let me quote some of the comments by President E. B. Rust, Sr. as published in the ALFI News of March 17, 1972 after the "turnaround" had been accomplished. Rust described it as "an astounding turnaround" and that State Farm Mutual had a remarkably profitable year in 1971 after "substantial losses" in the immediately preceding years. He said the company would continue "the policyholder program inaugurated in Mid-1971". Rust further explained that the program resulted from "what has to be the most astounding turnaround in the history of the auto insurance business". He continued, "Just three years ago, in 1969, State Farm Mutual reported the largest underwriting loss ever suffered by an auto insurance company—$91.6 million. In 1970, we were able to turn it around to a $27.1 million profit". I believe that says it all and yet management continued to support our data processing programs with unwavering sustenance through out that era.

Nevertheless, during that same period, March 1969, State Farm announced the tentative plans for the construction of the new corporate headquarters to be constructed on 39 acres "at the east edge of Bloomington" involving an "8 building complex of 1.5 million square feet". This certainly is evidence of sound and controlled management to announce such a venture in the midst of that enormous loss picture.

Although data processing basically was not requested to withdraw or revise its major systems plans, we were made aware of the severity of the financial problems and as a result held meetings with our departmental sections and units, particularly during the early months of 1970, explaining the need to increase our personal as well as corporate processing efficiency as much as possible.[80]

This need for increased efficiency was just the spark we needed to work even harder on the day to day activities in the EDP Research Department and especially toward the publication of the details and subsequent implementation of the Real Time System. Top management, in general, along with our data processing management knew it would be the system of the future for a long time to come which it truly has proved to be albeit with the myriad innovations and changes implemented over an extended period of time during the 1970's as the renamed Delta System.

Two primary changes, among others, were incorporated into what had been the Real Time System when it was renamed as the Delta System during the next decade: One change was conceptual—the introduction of the Echo System concept which substituted computers for the "dumb" CRT terminals originally considered for agent's offices; and, the second change was dictated by State Farm's continuing phenomenal growth forcing the abandonment of the zone concepts and thereby reverting back to the concept of each regional office having control of its own set of computers. Both of these changes were quite fundamental and will be the underlying thesis of Chapter VII which explains Computer Era V, 1973 through 1980.

During the early months of 1969, however, we were concentrating on the problems of designing and implementing the Real Time System. In order to assure that this task would be properly addressed, Robert Deems was promoted to the position of Director-Teleprocessing Systems as announced to the EDP Research personnel on March 6, 1969. Deems was an experienced administrator having had supervisory experience in both the Midwest (Illinois) and Mid-Atlantic (Pennsylvania) regional offices as a Service Superintendent. Deems became a Superintendent-programming in the Methods and Procedures Division of the Planning & Research Department before joining the EDP Research Division of the Service & Systems Department on September 1, 1965. (This was the same date when Marquardt renamed the Planning & Research Department as the Service & Systems Department and transferred the operations programming function from the Methods & Procedures Division to the EDP Research Division of the department.) From September, 1965 until March, 1969, Deems reported to Roger Woodrey with the responsibility for divisional programming research.

In his new capacity as Director-Teleprocessing Systems, Deems reported to Willke and was responsible for research, design, and programming of the on-going Corporate Teleprocessing Network and the teleprocessing network of the future Real Time System.

State Farm's Real Time System Technologies

Many individuals have asked me over the years, "What was the basic concept and fundamental objective of the Real Time System at its inception that was to make it so important?" So let me try to explain it thoroughly so that we can understand the true tenor of this entire Computer Era IV.

To do this we must recognize that it was the fundamental changes in computer technology, particularly the IBM 360-370 computer series, which made it possible for us to even think of a system as revolutionary at this. In order for us to employ this technology, we had to provide the design concepts which utilized this enormous computer power and which allowed us to designate it as a "Real Time System".

So what is real time? Real time in its purest, technical sense is the ability for a system to manipulate the manufacturing, business, scholastic, space, and other major processes, precepts, physical material, or transactions, etc. instantaneously in such a manner that the desired results can be attained, read, or used almost immediately by a human being or a mechanical vehicle, usually another computer, for additional purposes. In simpler terms, it means the desired results from any process are achieved almost immediately.

In those terms, State Farm's Real Time System was not a *pure* real time system but rather a hybrid, doing much of its work on an instantaneous basis, but a significant portion of its processing continued to be done on a batch basis. To utilize the computer systems of that era on a full real time basis would have been too costly. More importantly, all of the technical capability to do "all" of our processing in a true real time environment was not fundamentally practical. Nevertheless, we named it the Real Time System because much of the essential information resulting from the processing of our policy applications and claims became instantly available through the then recently announced video "CRT" terminals. (We did not use those terminals for data entry initially.) Besides, we believed we were the true pioneers of this concept in the auto insurance industry in that early period and the enormous attention we received world-wide corroborated that belief.

This world-wide attention enabled us to write in a paper on this subject for delivery in Paris, France, in 1965, (mentioned earlier in this book) that:

> "We at State Farm Mutual recognize that our system will not achieve the 'ultimate' **in design or efficiency in terms of our own definition;** yet we will be taking a long stride toward what today may appear to be that goal, fully realizing that man will never achieve the ultimate in a world which has an ever changing standard of knowledge and values."

A more complete answer to the question posed earlier, "What was the basic concept and fundamental objective of (State Farm's) Real Time System at its inception . . . ?" can be best explained by quoting from the booklet titled, "A Real Time System For State Farm Mutual" published on May 21, 1969. It stated that:[85]

> "The very concept of real time processing utilizes IBM's extraordinary supervisory system known as the Operating

System which performs many of the operational functions automatically with a minimum of operator intervention.

"Real time processing permits to a great degree, instantaneous processing of data as it is entered into the system including the handling of the transactions for insurance operations, storage of the results into direct access storage devices for immediate retrieval, and to a great measure, instantaneous distribution of this information into immediate access storage devices for instantaneous retrieval of management information subject to the limits of security built into the system under program control."

"Although it is not possible (really meant practical) to store all statistical data into immediate access storage devices, a reasonable balance in this regard is developed in this system to provide for immediacy of those reports from which immediate answers are required whereas for other reports where such immediacy is not so important, the processing will still be batched and handled on a periodic basis. Through this reasonable mix, it is possible to secure the benefits of real time processing without the extraordinary cost that would be involved should all processing be on that basis.

"This system, when implemented, will represent one of the most powerful if not the most powerful system of computers working in unison with each other in the industry. (At that time!) It will comprise some six major computer systems ... These systems will be inter-connected with a vast network of teleprocessing lines between the various offices and zones representing about 5,800 miles of wideband lines over microwave and cable facilities within the zones; 9,000 miles of voice grade lines between the regions, and 3,000 miles of sub-voice lines to the Claim Service Centers. (Six zones were contemplated but only one was installed before it was converted to the Delta System concept—to be discussed in Chapter VII.)

"This network will permit instantaneous retrieval of policy, claim or management information in varying degrees of content from the Home Office, all regional offices, or selected Claim Service Centers as well as transmission of administrative messages between all points on the network. It will provide the president's office, departmental information and special reports to the degree that has never before been available to management in the insurance industry.

"This system is being built with a modular design of an immediate capacity of 16.5 million policies in force, and a potential that permits growth to upward of 25 million policies without changing the design or concept of the system. It (will have) the capability of handling this potential growth without re-programming and thus can be enlarged merely by increasing the amount of storage required by adding additional storage devices . . .

"Among the more important specific major objectives that will be attained from the system will be to improve the service and reduce the clerical work of the operating divisions as well as expand automatic processing. To accomplish this, policy and claim records will be stored entirely in direct access storage devices instead of on magnetic tape; transactions will be completely handled as they are entered; division to division transfers will be handled with one entry; and, policies will be grouped and identified by social security number so that a single reference can determine all policies owned by an insured. (That potential was never achieved via the social security number but by another algorithm.) In addition, agents' assignments will be made immediately instead of over a 6 month's cycle; claim frequency information will be held with the policy master information; and, policy and claim information will be available throughout the network. (Although within that booklet no mention was made of providing agents with immediate visual display information of their own 'book of business'. Shortly after publication, consideration was given to placing "dumb terminals" in selected agents' offices on a test basis. However, because of the massiveness of that system, nothing was done about that concept until a few years later when the ECHO concept was conceived and promoted by Dr. Norman Vincent. The next chapter will discuss fully the ECHO concept and how it evolved.)

"From the standpoint of agency information, certain information will have immediate, direct access storage retrieval capability with instantaneous "hard copy" reproduction of this information when desired. Among the more important agency information that will be immediately available, subject to the limits of built-in security, will be the amount of compensation by agent and by state, financed agent deficits, the State Farm Agency Manager Retirement Trust, and the manager's charge for agents financed plus the agent's personal history.

"Other advantages accruing to the Agency Department will be more current reporting of tax information, and the ability of the Agents Compensation Department to make instantaneous changes into the various agency compensation records through a visual display device.

"Major improvements in the statistical reporting area will include the availability of certain key data through visual display stations situated at strategic locations in selected Home Office departments. Premium in force figures will be available on an individual coverage basis rather that a total coverage basis as under the present system.

"In addition . . . new microfiche (microfilm) techniques will enable us to eliminate "mountains" of paper where the high volume makes it difficult to locate and extract the data from the more voluminous reports. This microfiche technique can store the equivalent of some 207 pages of documents on each 4" X 6" microfiche film. Information can be retrieved from these microfiche films in seconds through a special, inexpensive microfiche viewer.

"In addition, personnel data for the personnel Department will be available (via) on-line storage devices which can be secured by the Home Office Personnel Department from (all) regional offices' personnel files as well as Home Office files . . . The 'visual displays' through which this information will be retrieved will be 'security programmed' so that the highly personal and confidential data will be available only to Personnel Department employees and executive management in the Regional and Home Office departments.

"Among the advantages of this system for the Administrative Services Department will be the elimination of the manual post index file and very sophisticated stock record inventory system. This system will feature automatic orders and replenishment of stock files with safeguards to avoid over-supplying as well as under-supplying the needs of a regional office or Home Office department. Finally, a better control of inventory pipelines will be one of the major benefits from this system."

The preceding explanation perhaps is more than most individuals need to know about the Real Time System. The purpose of quoting that portion of the introductory booklet was primarily for the "technical buffs" who may want to know what were its fundamental objectives. (That excerpt was merely part of the introductory transmittal of a booklet about one-half inch thick setting out the complete details of the proposed system.)

The objectives identified above were established as a result of consultation with the management of certain departments within the company which had expressed their desire for specific benefits which they had hoped to obtain from this system.

Over the years many of those objectives were achieved but not all of them. it is quite possible because of changes in subsequent systems or in the revision of departmental needs that those which have not been achieved may never be achieved or may never be implemented.

The Real Time booklet included an initial "dual" test run schedule for the Illinois Office for April 1, 1971. The dual run was scheduled to test the accuracy of processed work from the new system against the same "actual" work produced from the same input by the time-tested 1400 system. The actual Real Time operations, if all went well, were to begin on July 1, 1971 and Zone operations to begin February 1, 1972. These were obviously adjustable dates depending on the progress of the program formulation and testing over the next three year period, 1969 to 1972.

Although the schedule occasionally had to be revised, twenty years later it appears that it was remarkable that this schedule was delayed only by a few months. According to the ALFI article of May 17, 1972, titled "Real Time Comes To State Farm", actual operations were initiated in the Northern Illinois Division of the Illinois Office on May 1, 1972. Although actual implementation was approximately one year late, it was definitely an extraordinary achievement considering the complexity of the system even though not all objectives of the system were implemented at that time.

This was such a notable event in Bloomington that businesses outside of State Farm hailed this event in a number of ways. The McLean County Bank hailed it on its electronic sign: "GOOD LUCK STATE FARM REAL TIME".

Formulation and Implementation of Real Time

Much has already been said about the Real Time concepts and objectives. However, much hard work and many "trials and tribulations" were involved in the preparation of its initial installation. Lurking behind that effort was the ever present steady growth of State Farm which has always happily "plagued" data processing design aspirations over its many years of existence. It was even more prevalent with the Real Time System because of its enormity and complexity. Although it was intended to include six major teleprocessing zones when completed, before we could reach that goal we were combating the question of whether our growth would make each of these zones obsolete before they were installed.

Before the system was ready for installation many design changes were considered and a number of design as well as corporate management meetings were held to formulate not only the best system but to keep management informed of the various problems that were encountered and to keep them enthusiastically behind the project. In addition, the moving force behind our early real time efforts, C. A. Marquardt, became seriously ill resulting in a number of significant corporate and data processing management changes. With major management changes, there are sometimes significant corporate concept changes. Luckily, as a result of Marquardt's illness, although there were some differences in philosophy, most of the fundamental real time concepts continued to get management's full support although later under the renamed "Delta System". (Those management changes will be explained later in this chapter.)

Among the activities behind the scenes during the development of Real Time included many visits with various manufacturers of computers and component parts although we had settled on the IBM 370 Series as the "engine" to power the various zone configurations. For example, Viatron Corporation, on September 18, 1969, introduced its "then" sensational advancement of a new computer chip which they claimed placed 400 transistors into a space no larger than the "head of a needle". (Today that is not particularly significant but in 1969 it was awesome!)

In addition to trying to focus on the development of Real Time, we were involved in a study to determine if we should contract for the services of the "Information Corporation" which recommended that we should engage in the first ever study of State Farm Mutual's vast computer network to determine its true efficiency. Wisely, top management voted against that effort which would have severely slowed our Real Time efforts.

We were also approached about a new study which also affected our work load from an unexpected source, namely, by Marquardt in late 1969. Marquardt by that time had recovered from his illness and as head of the Service and Systems Department proposed a method of editing data for accuracy as it entered the Real Time System. We agreed to the concept which required additional resources but I am unaware of its eventual benefits.

New projects also had to be taken into account not previously considered in the original design—all of which had the effect of possibly delaying the scheduled implementation date. Among the more significant projects considered were a renewed effort by the General Underwriting Department for the inclusion of computerized underwriting within this new more powerful system. A consensus was reached to abandon that idea. Meanwhile, Richard Andes had been commissioned to formulate a method of identifying and using the zip codes via our Real Time programs for purposes of recognizing and identifying our auto policies. Another important concept which had an important but advantageous effect on our system was the new data base concepts being devised and which we incorporated. Those are merely examples of items that were part of an accelerated stream of changes affecting our schedule.

In spite of the many "obstacles", we initiated the first zone, Zone 4, on May 1, 1972. The first division in the Illinois Office to use the system was the Northern Illinois division. In a matter of months during 1972, we placed the remaining divisions in Illinois on the system followed by the North Central and Missouri-Kansas Offices by December 1972 under the zone concept. Our growth did indeed make the zone concept obsolete, with the result that Zone 4 was the first and last zone to be installed under the Real Time System. See Figure #6 for the zone configuration as planned.

By December 1972, plans were under way to expand to the next zone with the West Central Office as the targeted office.[86] The three offices included in the zone used IBM 360 Model 30 systems for the input and output processes required by the automobile insurance divisions in those offices. All other types of work (accounting etc.) was performed at the central site, the Illinois Regional Data Center, on a 370 Model 165. Fire Company processing had been removed from the regions and was being processed by the Fire Company Zone Center in Bloomington.

By this time, December 1972, Zone Telpak had been dismantled countrywide and the remaining regional offices had an IBM 360 Model 40 and either one or two 360 Model 30 computers, depending on the policy volume of the office, for their work processing.

IBM System 370 and Its Technical Enhancements

Inasmuch as the Real Time System was designed primarily around the technical enhancements of the System 360-370 computers, especially the 370, it is only appropriate to examine that system and explain why it was chosen for this task. Basically, the System 370 was an extension of the System 360 and was IBM's name for the evolutionary stage reached by System/360 as we entered the 1970's according to the authors of the book, "IBM's 360 and Early 370 Systems".[37] It may appear that computer innovations were beginning to recede in the late 1960's. I must admit it appeared that way to me as even in this book you will not find me discussing bonafide new generations of computers after the introduction of the System 360. You will find explanations of significant changes and improvements. Robert Sobel argues that outsiders as well as those heavily involved, had mistakenly considered it as a "letdown after the 360 introduction . . . " but which was merely a change in direction partially in response to a new set of competitors.

The pioneering spirit was still alive, but most noticeably among smaller firms which had entered the field. These new firms were active in producing new components and peripherals. Some of these new competitors were established as service companies while others were producing plug-compatible hardware as well as such extremes as minicomputers and giant brains.

Many of these companies were organized by former employees of IBM or other large computer manufacturers. The result of this activity in the early 1970's was that actually there was an increase in computer manufacturing activity but it was not directed at new generations of computers.[2] For IBM the activity appeared more like living off the enormous base that had been established by its 360 line rather than place large amounts of capital into a new generation of computers. However, the very large firms such as IBM, Honeywell etc. continued to innovate resulting in technical improvements and more product lines but not another distinct computer generation.

Author Sobel felt that some outsiders thought that a kind of sclerosis of the mind had set in caused by the tremendous impact of the 360 introduction. He also observed that some writers took it to be a sign of industrial maturity with the result that there would never be another "phenomenon" like the IBM 360 System.[2] In fact, it is my opinion that that observation has in fact been corroborated. Yes there have been successors to the 360 System such as the System 370 and its variety of new models but none have had the immediate and enormous impact felt by the introduction of the System 360.

A substantial influence in that direction has come from IBM itself because it has refrained from inventing a whole new computer generation stemming from its desire not to disturb its client base which had been so extensively enlarged by its 360 System success. Instead it has found that it is much more cost effective to follow the "managed change" or evolutionary concept than to revolutionize the industry repeatedly by introducing a new computer generation periodically. The result has been that the computer industry has stabilized considerably since the volatile 1960's—especially among manufacturers of the large computer mainframes. I am afraid that cannot be said for the industry involving minicomputers, personal computers, work stations, and everything in between.

IBM clearly indicated its desire to follow the evolutionary route with the introduction of the System 370. Initially it wanted the 370 to be the fourth generation computer but for reasons stated above it decided to make significant improvements over the 360 System while being very careful not to proclaim it as the fourth generation. Yet, for us at State Farm it had many new desirable features such as a major new storage system which was much larger and considerably more accessible. It was especially attractive because the cost per unit of calculation was reduced in some models by as much as sixty percent.

It is for those reasons that State Farm chose and waited for the System 370/165 for its central Real Time computer when we initiated the system in the Illinois Office in 1972. It, first of all, was built upon the 360 technologies with which we were familiar, and secondly, was more powerful, had more storage, and had a more powerful Disk Operating System at a considerably reduced price. However, it was not a drastically new fourth generation computer which would have caused us to return to the drawing board for our own Real Time System. As had always been true at State Farm, price was one of the prime motivating factors.

Sobel corroborated this when he noted that the technological changes were not dead but the 370's clearly did not represent a quantum leap innovatively.[2] With this in mind, it is interesting to observe that IBM did provide the new system with a new series number, the 370 System rather than add new model numbers to the 360 System. When company executives were questioned about that decision, it appears that the decision had more to do with company morale and pricing than a desire to improve the technology and computer performance.

With this background of the introduction of the 370 System and why we chose it, let us examine more closely some of the specific technologies that made it so attractive.[37] Verification of this attractiveness may be found in the fact that in 1989, 25 years after the announcement of the System 360, more than 50% of the estimated value of large computers was based on the 360-370 architecture. (However, it is not conducive for use within the minicomputers and personal computers which are rapidly acquiring the "lion's" share of the total computer market in the 1990's.)

That fact verifies that one of the major technical achievements of the 370 System is that it had attained product-line compatibility without losing its market share. Another factor was that it had a performance range of about 200 to 1 ranging from the 360/Model 25 to the 360/Model 195 and even a greater range when the larger models of the 370 are considered in this mix. What this means is that this line of computers had to have an efficient method of addressing memories of enormous disparity in capacity. This was possible through IBM's use of base registers which were one of the key technologies of the architecture.[37]

The 360-370 systems architecture moved from the standard 6-bit byte (i.e. character) to the 8-bit byte which made it much superior for text processing. Another feature of these computers was for their ability to provide four distinct processing instructions which effectively enabled them to handle both scientific and commercial processing with equal ability. This capability was a driving force in obsoleting other computers which had been designed earlier either as a scientific or as a business-oriented computer. This was true even for IBM's own earlier versions.

The first Series 370 model announced was the 370/145 in September 1970 which was intended as a successor to the 360/40, with an instruction execution rate of 3 to 5 times the rate of the 360/40.[37] In March 1971, the 370/135 was announced as the successor to the 360/30, with an execution rate of 2 to 4.5 times the 360/30 for business-oriented computations and 3.5 to 7 times faster for scientific-oriented computations. However, IBM announced that the main news in those announcements concerned the memory change to monolithic circuitry after using ferrite-core memory for nearly a decade. Other, larger 370 systems also had similar increases in the instruction execution rates over their 360 System predecessors.

One of the last and perhaps one of the most important improvements of the 370 Systems was it virtual memory capabilities. As explained earlier, virtual memory enabled a programmer to program a system as if the actual computer memory were many times its actual memory size. It permitted memory addresses to be addressed dynamically. IBM explained this phenomenon in this way:[37]

> "The dynamic address translation feature of the new models (various 370 System models), coupled with supporting operating system functions, enabled System/370 to execute programs written as if to be executed in a memory of 16 megabytes (equivalent to 16 million characters) . . . System/370's virtual memory of 16 megabytes had its actual representation as an area in *disk storage*. (That simply meant that while the computer's actual memory did not need to be anywhere near 16 million bytes in size, the disk storage had to be actually 16 megabytes in size and be addressable as such.)
>
> "No longer was it necessary to define a separate memory area for each of the programs being executed *concurrently*; instead it sufficed to avoid having programs claim the same territory in the far more capacious virtual memory in disk storage. This ensured increased efficiency in the use of memory."

Virtual memory capabilities for the System/370 computers was announced by IBM in August 1972 at the appropriate time for State Farm to begin using that concept in its future Delta System conversions which began in the next Computer Era V, described in Chapter VII.

IBM's State Farm Marketing and Consulting Teams

From the very founding of data processing in State Farm, the IBM management, marketing, consulting, and engineering teams have been very important to us in the installation of new or revised IBM computer systems which we used almost exclusively during those early computer eras. This assistance continued to be a valuable asset to State Farm during this computer era and the installation of the Real Time System.

During the years 1969 through 1972, IBM continued to make a number of changes; but, the frequency was beginning to diminish with IBM personnel remaining longer in the Bloomington IBM Office than during earlier eras. This was not true for everyone in the local office, but from my vantage point the turnover rate seemed to relax especially at the top office management positions. That process appeared to continue to stabilize even further in later years.

During 1969 Craig Chamberlin replaced Kent Savage as Marketing Manager of the IBM Bloomington Office after serving State Farm for about one year. Chamberlin remained as head of the Bloomington Office until August 1973 when he was replaced by Al Johnson, the first Account Manager in IBM's Bloomington Office. Some of the other key IBM personnel that were quite important to us as we developed the Real Time System were Weyland Ginther, John Henry, Mike Albrecht, Carmen Trenton, nee Baldwin, and Bill Swanson—all marketing representatives. Ginther joined the IBM team at the same time that Johnson assumed the Account Manager post. John Henry, a former systems engineer, had already served State Farm for two years prior to Johnson's arrival. Systems engineers, who were also "on board" prior to Johnson's arrival, were Robert Blaesing, team leader, and Al Smith. All of those individuals, as had been true throughout State Farm's data processing history, were extremely helpful and often worked as many long hours as many of our own State Farm'ers did during that period.

State Farm Management Promotions and Reorganization

A number of important corporate and data processing changes occurred during this Computer Era IV stemming primarily from the retirement of Chairman of the Board, Adlai H. Rust and the sudden illness of long-time Vice President of Service & Systems, Carl Marquardt. During late summer of 1969, Marquardt suffered a mild heart attack and spent a month or more recuperating at home before his return to work that fall. Upon his return to work, Marquardt, Vice President of Service and Systems, and therefore corporate head of data processing, and methods & procedures, agreed to management's offer to lessen his work load by removing the responsibility of the data processing functions. On September 8, 1969, Roger Joslin, was named Vice President and Comptroller, and assigned among other duties the responsibility of a number of departments including "data processing and EDP Research" according to the ALFI of October 3, 1969. As a result, Arthur Dierkes and Myron Willke reported to Joslin rather than Marquardt. Data Processing was Marquardt's first love, and although he was happy for health reasons to be relieved of that burden, he continued to miss the "excitement" of data processing, which he confessed to me years later.

I had enjoyed my many years, nearly twenty, with Marquardt immensely. However, even though their management styles and philosophies were somewhat different, I found both Marquardt and Joslin equally easy to work with. To fortify that statement, shortly after this management change I had an extraordinary opportunity to leave State Farm when I was offered the presidency of Insurance Systems of

America on November 11, 1969. I remained with State Farm because I had enjoyed my relationship with Joslin and because I was really a State Farm'er at heart. (Actually I had a number of similar opportunities which I refused for the same reasons.)

At that time, Arthur Dierkes continued to supervise Data Processing Operations and EDP Research remained my responsibility. Management philosophy did appear to change direction somewhat with less emphasis on the implementation of new systems and more emphasis on ongoing programs.

On March 8, 1970, in another organizational move, Dr. Norman Vincent was assigned corporate responsibility for Data Processing Operations and EDP Research. Both Dierkes and I reported to Vincent with Vincent reporting to Joslin. Vincent retained his office in the old Home Office Building in downtown Bloomington whereas Dierkes and I retained our offices in the Towanda Avenue Building (TAB Building). As a result no physical changes in offices or work areas resulted from this change. However, one important communications change did occur which was an advantage for everyone involved: separate staff meetings for EDP Research and DP Operations were now combined into a single staff meeting held in a conference room located in the Illinois Data Center. Chairmanship for this meeting was rotated.

Meanwhile, at the June 8, 1970 Board of Directors Meeting, Chairman of the Board, Adlai H. Rust announced his retirement with Richard P. Stockton named as his replacement as the new Chairman of the Automobile Company Board. Rust remained on the Board as Chairman, Emeritus. Other announcements at that meeting were:[88]

> Thomas C. Morrill, Chairman of the Fire Co. Board. Earle B. Johnson, Chairman of the Life Co. Board. Walter H. Vernier, Chairman of State Farm General. Chairmanship of State Farm Life and Accident Assurance Company remained vacant.

Edward B. Rust, Sr. remained President and Chief Executive Officer of State Farm Mutual and each of the affiliates.

Additional data processing organizational changes included the reorganization of data processing operations on August 28, 1970, with the placement of all Automobile Company computers, located in the Home Office, under the direction of the Home Office Data Processing including those previously under the direction of EDP Research which were used exclusively for program testing.

EDP Research and the Home Office data processing were combined officially as the Data Processing Department on January 1, 1971. On January 8, 1971, Vincent was named as the first Vice President-Data Processing for State Farm Mutual, and Chan Charlson was named Vice President-Data Processing for the State Farm Life Company. Myron Willke was named as an Assistant to Vice President and Comptroller, Roger Joslin, on May 3, 1971 and as a result relocated on the 12th Floor-North of the Home Office Building as part of the corporate executive office. In that capacity, along with other duties, I remained involved with data processing affairs as a liaison with the data processing activities and continued to work closely with Dr. Vincent and others within data processing. When the Data Processing Executive Office, a 4-man management team known as the DPEO, was formed in 1973, I returned to the Data Processing Department as part of that team. (More will be said about the DPEO in the next chapter.)

Other Staff Promotions and Hires

During the early years of this era from 1969 to 1972, other significant changes were being made in the management structure and particularly among those individuals reporting directly to me. My management style included the placement of two or three individuals on my immediate staff who would be responsible for specific research or other tasks which were especially important to me. One was basically responsible for hiring and training new employees; a second individual was responsible for new data processing concepts and research in order that we could stay abreast of the newest methods which could improve our productivity; and, the third staff member was responsible for EDP Research budgeting and personnel records—especially their currency and control. These were areas that were very important to me and in my judgment, very important to Data Processing's responsibilities within State Farm.

At the beginning of the era, EDP Research was beginning to grow extensively with about 300 employees, not large enough to set up separate Units for those tasks but too large to be handled by myself or my secretary. During the last quarter of 1969, the three members of my staff were Richard Wadley, Bill Wilkens, both who now have top regional office management positions as described in the previous chapter, and John Janes who is retired. This was a very hard working, loyal administrative staff for whom I will always have the highest regard. In addition, Roger Woodrey and Richard Andes, who shortly thereafter became a staff assistant to Vincent, were Directors of the Research and Programming Divisions of EDP Research, respectively.

Additional staff changes in 1970 included the promotion of Wadley as my Staff Assistant and the hiring of Richard Buchanan, as the replacement for Wilkens who was promoted to the Home Office Personnel Department. Buchanan continued to handle the duties of hiring new employees which was becoming increasingly important.

Data Processing Consultants—Regional Office Liaison

In 1968, Carl Marquardt and Arthur Dierkes had many regional office executives and regional data processing managers write or phone them about regional office problems or more information concerning new data processing programs which they had heard about through the "grape vine". During the early years when data processing was a new and relatively small venture within the company, Marquardt and I would handle those problems or questions personally. As the number of regional offices increased and the data processing function became more complex and assumed a much more important role within the regional offices, Arthur Dierkes as the head of the Home Office Data Processing Division of Planning & Research answered many of those inquiries. However, by 1968 the amount of communications concerning the data processing role and the need for problem solutions became overwhelming. As a result, the position of Data Processing Consultant was established.

The first individual appointed in 1968 as a Regional Office Data Processing Consultant was Joe Giroux. Giroux had been a Regional Office Data Processing Manager in the Northwest Office with many years of data processing experience.[101] Giroux was transferred into the Home Office and among other duties, was the first person appointed to that position.

A consultant must have some very special talents and personality. This position requires an ability to communicate and socialize amicably with others who may not always agree with the consultant's role or his professional position on any given subject. The data processing consultant must have a wide data processing experience because he must have real credibility whenever the discussions involve technical data processing concerns of the regional office or Home Office. The need to keep technologically current required constant contact with the major vendors, keeping abreast of new products being offered as well keeping in tune with any problems that may require expert knowledge regarding installed products.

Perhaps, the most difficult tasks involved in the consultant's responsibilities are the almost paradoxical positions of representing the regional office "position" when discussing the regional viewpoints with Home Office management; and, a sometimes opposite stance when representing the Home Office "position" when discussing the Home Office viewpoints with regional office management. In addition to this rather "political" ability, consultants must be widely versed in all of the company's endeavors which require them to be well informed about the hardware, software, programs, and people aspects of State Farm's nationwide activities. (After being told of that description, one of the current consultants said, in jest, he is going to ask for a raise!)

Luckily, the consultant's position at State Farm has been filled by very capable, loyal individuals thereby resulting in a very low turnover rate. Because of the unique matching of their abilities and the requirements of the position, some of the early consultant's have remained in that position since their initial placement in the position, namely, Jim Weikel and Jerry Smith. Because of the tendency for such longevity, I shall name, in this chapter, all consultants who have participated in this role even though their tenure covers more that this particular computer era.

The following is a list of all former and current regional data processing consultants, the years they were in that position, and what their current position is with the company (or retired):[101]

Years	Consultants Current Position
1968-1969	Joe Giroux—Retired
1969-1971	Jerry McAhren—Regional Vice President, Oklahoma
1971-1974	Gene Shaw—Local Agent, Texas
1974-(?)	Jim Weikel—Consultant currently
1974-1985	Dick Marley—Regional DP Manager, So. Calif.
1978-1980	Paul Brandt—Data Processing, Home Office
1978-(?)	Jerry Smith—Consultant currently
1980-1982	Bill Goodmon—Data Processing, Home Office
1982-1985	Ron Mitchell—Data Processing, Home Office
1985-1988	Jim Simpson—Data Processing, Home Office
1985-1989	Bob Seath—Data Processing, Home Office
1988-1990	Randy Olds—Data Processing, Home Office
1989-(?)	Dennis Perzo—Consultant currently
1990-(?)	George Fry—Consultant currently

The fact that only fourteen consultants have held that position in a period of over twenty four years, when only four are usually required at any given time, is evidence of the quality of the individuals and the stability they gave to the position. This is especially true when considering the untold airline miles flown, irregular meals, and weeks away from home and family. I commend these men for an extraordinary job, well done.

New Data Entry Techniques Introduced

Although the "big story" of this era was the Real Time System, many other important technological experiments were in process along with other technical changes that not only benefited data processing but State Farm as a whole and especially its policyholders.

It is my judgment some of the most important of those experiments were involved with data entry innovations. From the date of the initial use of Electric Accounting Machines, known as EAM equipment, at State Farm in 1928, the principal data entry devices were the Key Punches and Key Punch Verifiers, which were explained in Chapter II. Those machines punched holes into what were originally known as Hollerith punch cards, named after inventor Herman Hollerith, but today generally recognized as IBM cards.

For many years, different ideas were pursued as potential replacements of the punch card as the principal data entry vehicle but with little or no success. In the mid-1960's, a new concept was invented which did succeed and which we in State Farm helped to innovate and test for economic validity. That device was the key to tape input device.[89] The basic concept was similar to the magnetic tape used by computers of that era in the reading and writing of the electronic "bytes" on magnetic tape.

The authors of "IBM's 360 and Early 370 Systems" explained that new device this way: IBM "responded to customer interest with the IBM 50 Magnetic Data Inscriber, a keyboard-oriented device that recorded on tape cartridges . . . (and read into the IBM 2495 Tape Cartridge Reader which was attached to the 360 computer.)[37] These products were announced in April 1968 in conjunction with software that supported their use with System/360 models. Information retrieval was one of the applications congenial to the IBM 50 Inscriber, but because the product came late and suffered from the limitation of all other key to tape devices, it played a minor role." This reference to "limitation" apparently was directed at this device because it was considered a "key punch alternative". As an input technique it was about to lose it viability with the advent of other input concepts already being considered such as optical character recognition and cathode ray tube video monitoring. It was because of those new input concepts on the horizon which reduced the impact of the Key to Tape machines.

A number of smaller electronic equipment companies were being formed including several which entered the key to tape field. We began to explore a number of those devices on July 29, 1969 and on November 24th we decided to test six machines produced by the Data Action Corporation. We established two formal tests of those machines in the two regional offices of Lake Central (Indiana), followed by further tests in North Central (Minnesota). Shortly, we also began testing the IBM Type 50 Inscriber. As a result of those tests, we found the IBM machine superior and by December 18, 1970 we had withdrawn all key to tape machines except the IBM machines which we proceeded to install countrywide.

Those IBM Type 50 Inscribers and companion tape verifiers were installed in the Home Office and all regional offices for a few years until we converted to the next generation of input devices which will be discussed in the next chapter. In an IBM Field Engineering news release dated May 12, 1969, it corroborated the fact that State Farm was the first company to install the Type 50 Inscribers with this announcement:

> " . . . the first customer shipment of the IBM Type 50 Magnetic Data Inscriber and the IBM 2495 Tape Cartridge Reader (was delivered) to the general offices of State Farm Mutual Auto Insurance Company.[92]

"Developed and manufactured at Poughkeepsie (N.Y.), the companion machines represent a new generation of key entry."

State Farm was one of the largest, possibly the largest, of the users of IBM Type 50's anywhere.[90] The entire concept worked much like the use of Key Punch and Verifier machines except information was keyed onto magnetic tape and verified on that tape for accuracy instead of on punch cards. An interesting anecdote about those machines was that the system was so silent that our operators objected to the silence after years of key punching using IBM cards. As a result, we asked IBM to place a "clicking" device on the Inscribers and Verifiers so that operators would "know" something was actually happening when keying information onto the tape. Without the artificial clicking, that virtual silence frustrated many of the operators. Those key to tape machines were used only a short period of time, being replaced toward the end of that computer era with other input devices.

The advantages of those systems over key punching included the ability of operators to increase their productivity, the removal of such irritants as punch card jams and destruction within the key punch machines, and even with the "clicking" we had built into the machines, they were much quieter. Perhaps, most important the cartridges could be used repeatedly by typing over the old, used information, which was thereby erased, and in the process reduced input costs significantly since cards were a "one time use" vehicle.

Simultaneously with the installation of the Type 50 Inscribers, we were investigating other new data input concepts, especially optical character recognition and the new Cathode Ray Tube video monitors, commonly known as CRT's, which ultimately had an enormous impact on computerized communication as well as computer data input.

Optical Character Recognition Research at State Farm

Study into the potential of optical character recognition was inaugurated as early as 1965 with a visit to Recognition Equipment Incorporated in Dallas, Texas. Although we continued to keep a low-key contact with Recognition Equipment Inc., it was the year 1968 when we became very heavily involved with IBM in the mechanized recognition of both hand-printed and typed characters for the purpose of accelerating and improving data input. We had the utmost top management support of Rust, Marquardt and Vincent for this research. Vincent especially was supportive and accompanied me on a few visits to IBM plants involved in this early effort. One of those trips I shall never forget. Vincent and I flew to Rochester, Minnesota to visit the IBM plant which was partially committed, at that time, to optical character recognition. We were in a two engine, propeller driven plane, possibly a Convair, when upon reaching Rochester we found ourselves in a violent thunderstorm and torrential rains. The visibility was so bad that the pilot, after three unsuccessful attempts to land, decided wisely to land at Minneapolis. On our arrival at Rochester by auto, we learned of the considerable damage caused by the storm including a number of bridges having been washed away. Both Vincent and I agreed the pilot made a very wise decision indeed!

Among those in the forefront of these studies beginning in 1968 were John Janes and Jim Wilson, assisted by a number of specialists in our department and the Service & Systems Department. Their efforts ultimately led to the eventual installation of the IBM 1288 Optical Character Reader.

While the eventual use of the IBM 1288 was quite successful, the initial experimentation and tests with IBM were exclusively involved with *hand-printed* documents. We had an arrangement with the IBM plant in Rochester, Minnesota, whereby for months we mailed hand-printed worksheets to Minnesota with which IBM was attempting to read those documents and convert that data into information that could enter the computers directly as recognizable data entry. This concept did not attain the degree of accuracy required by our State Farm standards. Therefore, on May 25, 1970, a high level meeting between IBM and State Farm executives was convened, the result of which was the decision to discontinue the IBM experimentation and study. The experiment failed primarily in the recognition of alphabetic characters, while the recognition of numeric characters was acceptable.

We decided to alter the direction of our research toward use of a worksheet which provided for the typing of the alphabetic information and a separate section for the numeric coding.[93] This combination was so successful that it led to the installation of the IBM 1288 Reader in 1971.

In a report published by a State Farm OCR Study Group, dated November 20, 1972, the report stated:[91]

> "In January 1971, an OCR Control Committee was established to develop a plan to implement an OCR System. Members of this committee represented EDP Research, Home Office Data Processing, and Service and Systems.
>
> "Beginning in June, 1971, the use of OCR as an input device was implemented in the West Central Office. All input from the operating division (except claim work) and MPP department was implemented by October, 1971. Following an evaluation and revision of the system, major changes were initiated in February, 1972 in the West Central Office. In April, 1972, OCR was implemented in the Westlake Village Office.
>
> "OCR as an input medium for the Auto Company is being extended to all regional offices. This implementation began in

September, 1972 and will be completed by approximately August, 1973. Use of OCR by the operating divisions and MPP is planned under Real Time, as well as under the current 1400 System"

The system referred to in the report was the IBM 1288 which was attached directly to the System 360/Model 30 in each regional office. The process of reading the divisional work through the IBM 1288 required less than 4 hours of clock time daily in each office while the System 360/Model 30 was simultaneously transmitting data over the Telpak Lines for the three offices under the Real Time environment. The whole OCR reading process added about 2 hours of computer time within each regional office.

The OCR concept using the IBM 1288 Optical Character Reader was shared with the Fire Company, which at this time was in the process of coordinating much of its data processing with Auto Company computer systems.[94] It was not feasible for the Life Company to use the IBM 1288 Reader with the Auto and Fire Companies.

The 1288 Reader was quite successful and remained the major data entry device for the Auto and Fire Companies until after my retirement in 1980. During the mid-1980's, it was replaced completely by Interactive Delta when data input via video monitors were installed companywide.

Visual Display Terminals—A New Concept For State Farm Mutual

Although Visual Display Terminals are universally used today, both for information retrieval and data entry, the first use that we envisioned for that device in State Farm was as a replacement of the typewriter Inquiry Terminal which had been in use since 1962 when the 1400 System was initially installed. As explained earlier, it did not become a "full-blown" data entry device until it replaced the IBM 1288 Reader in the 1980's.

We began to study the potential of the visual display monitors (CRT's) late in 1969 and early 1970. On June 16, 1970, we met with IBM management and sales representatives to discuss the potential of IBM's Visual Display devices as an Inquiry Terminal for the Real Time System. It promised to be a very promising substitute and two days later our State Farm Mutual management approved the first-ever contract with IBM for the installation of Visual Display Terminals as Inquiry Stations under the Real Time System.

Having made this significant decision, we decided to accept an offer from the Maryland Casualty Insurance Company to review their rather pioneering concept of insurance data entry via visual display terminals. We examined their display as it had been set up for public viewing in the Baltimore Hilton Hotel. They were indeed entering data via video terminals directly into their computer utilizing a concept which we did not adopt until years later, although by that time, considerably more sophisticated. Remember, in 1970, the Inquiry Stations at State Farm Mutual were primarily information retrieval stations only, since we remained with the IBM 1288 Optical Character Reader concept until the 1980's.

Although that was the first use of visual displays for us, the concept was first introduced by IBM in 1964 when it announced the IBM 2250 display family.[95] According to the IBM Journal of Research and Development, "The 2250 display presented an information content of up to 2800 characters ... The 2260/2748 product combined TV technology with delay lines for image refresh, to provide an information content of 240, 480, or 960 characters . . . per terminal. By today's standards, terminal functions were low . . . The 3270 family introduced in 1972 established new standards in function, performance, and reliability that resulted in user acceptance far in excess of expectations."

The first significant use of Visual Display Terminals within State Farm Mutual began with the installation of the Real Time System in the Illinois Office on May 1, 1972. Our first order was for the IBM Type 2260 display units, soon followed by Type 3270's upon their announcement by IBM. Needless to say, within a decade State Farm had placed Visual Display Terminals (followed by Personal Computers) in nearly every employee's office of the company.

In the aftermath of that research effort, State Farm moved on to develop Interactive Systems for Auto, Fire, and Health insurance. Beyond that, the development of the ECHO Systems for the Agents' Offices have also replaced much of the information which the Electronic Document Handling System (EDHS) concept was designed to capture. The development of the EDHS, Interactive Systems, and ECHO Systems will be discussed in detail in the next chapter.

Additional Research Projects and Objectives of This Era

As the sub-title of this chapter indicated, we considered this the era of Complex Experimentation. This is further corroborated by the research that we did on a number of unrelated projects in this period. Inasmuch most of those were not major projects and of which only a very few were placed into use, we shall describe them in abbreviated terms.

Random Sampling is a technique which had been considered by State Farm as early as the late 1950's but, while the 650 System was capable of performing that concept, it simply was too slow and cumbersome. We therefore continued "off and on" to research this concept primarily because the volume of millions of punch cards and later tape records for statistical and management reports was beginning to overwhelm us. Hence, the periodic renewed interest in random sampling, but while we found it advantageous for some one-time, specific projects, we never used it as a permanent, ongoing program. Our State Farm Research Department headed by Dr. Wayne Sorenson has used that technique extensively.

During Computer Era IV, we had mastered the technique quite well but upon presenting the concept to those most interested in the results, there was this uncertainty of its ultimate accuracy for reports that had to be precisely accurate. Hence, again this concept was placed on the "back burner" with the probability that from time to time it will again be "dusted off", considered, and possibly used.

Another new concept that IBM had introduced to State Farm's executives was the *Executive Information System*, which was based on a special executive information data base. In order to get a personal feel for what this system would do for us, especially in providing specialized management information not yet available under our Real Time System, a number of our executives, which included our Data Processing management team, flew to Poughkeepsie, New York, on August 1, 1972 to get a first-hand view of that system. It was both interesting and intriguing, but it was our decision to discontinue any further study into that concept, especially since we had our hands full with the Real Time System. Furthermore, it was my opinion that some of that same information could be extracted via the Real Time System eventually after it was fully implemented.

An interesting anecdote involving that flight to Poughkeepsie, N.Y. concerned the fact that we flew there in our own State Farm plane, a two-engine turbojet. However, the weather was so severe that it grounded our State Farm plane for such a significantly long time, that all of State Farm's executives flew back on a scheduled TWA flight. Just another interesting flight experience of which there were many during those years.

Other research projects worthy of mention into which we placed a varying amount of time and resources were the *Administrative Terminal System* by IBM and an attempt to renew the concept of *Computerized Underwriting* which State Farm pioneered in 1956. Both of those concepts were examined carefully but we considered them impractical—especially Computerized Underwriting for which, by that time, there would have been entirely different underwriting objectives which we felt would simply not be cost effective. That, too, was a project which on the surface seemed quite feasible until studied in depth. As a result of a joint study with the Auto Company General Underwriting Department as recommended by Roger Joslin, Comptroller, we met with Al Burgoyne, Vice President-General Underwriting on June 6, 1972 and made a joint decision to discontinue all further work on that project.

Research by the Loman Foundation, which had written about State Farm's original work in that area as used in the 1950's, created a renewed interest in that project and some companies continued to research the concept. What finally resulted from their research is unknown—State Farm did not pursue it seriously again. (See Chapter III for State Farm's initial experimentation with computerized underwriting.)

The Administrative Terminal System

The Administrative Terminal System, known as the ATS system, was a new software concept that IBM introduced to State Farm on October 8, 1970.[97] It was a package that was a precursor of the widely used word processor programs of today except that it was a host-based text processor, meaning it was designed for large central computer systems. It permitted the use of a number of interactive terminals, primarily typewriter terminals, to share the word processing capability.

Although we did pursue this concept and implement it on a limited basis, we were primarily interested in the contemporary Time Sharing Option package also being introduced. TSO, the acronym by which it was known, permitted a similar sharing of resources but on a much broader scale and was not designed for or limited to word processing. Being "command driven" software, it was not readily used for word processing because the average terminal operator could not use it for that purpose unless a capable technician made the necessary changes required for such use. Although State Farm had technicians capable of making those changes, we chose to test and implement ATS only for those areas primarily engaged in text writing and the preparation of company manuals.

Our initial goal was to implement it in the General Accounting Department to be followed by installations in the EDP Research and Service & Systems departments.[32] The General Accounting Department was going to use it for the rewriting of the Accounting Handbook but for some reason that never occurred. The Handbook was rewritten eventually via a stored program typewriter. However, ATS was installed for the preparation of manuals for both EDP Research and Service & Systems.[105]

The single most important usage of ATS was in the Internal Services Unit of the Data Processing Department under the supervision of Enid Jones. Internal Services used this concept for the designed purposes of printing manuals, booklets, and memoranda as required by data processing. This Unit had several terminals connected with the major computing center on the third floor of Building A from the installation of ATS in 1973 until its replacement in 1989 with the newer word processing systems already in use in the company for other purposes. As a result, the company's word processing techniques moved in an entirely new direction.

Enid Jones, long-time supervisor of this unit retired in 1990 under the company's generous disability retirement policy after an extended debilitating health experience.[148]

Data Base Technology at State Farm Mutual

A technology which became one of continuing interest and ultimately was implemented by State Farm during that era was the data base technology that was just beginning to be considered seriously by commercial corporations with huge data bases such as those at State Farm. Its origin was in the military establishment.

This subject is too complicated and enormous, and therefore beyond the objective of this book except to say that this was the beginning of an important and substantial effort on the part of State Farm Data Processing technicians to formalize and control a large and important resource i.e., corporate information. As the very name implies, it pertained to the storage, handling, and control of the many data files used in very large companies.

Over the years, from the very beginning of computerization in nearly every company, as each separate project was programmed, each had its own data base and as the result many of those data bases had similar but separate information, each storing that information in many different ways. For State Farm it meant the policy and claim information was stored in many different files resulting in a data base of redundant policyholder or claimant information. That same redundancy applied to agents' and many other forms of information used by the company.

This early effort recognized that information could be handled and stored in a much more efficient way and would permit the **same** information, properly organized in a single data base system, to be used by many other programs and time-sharing users. It was that concept that was examined by State Farm Mutual technicians for the *first time* on October 4, 1972. Today's huge computer systems could not operate efficiently or even successfully without the sophisticated data base technology which is the "heir apparent" of that initial effort of the 1960's and early 1970's.

IBM's Journal of Research and Development, published in 1981, further explains the introduction of the technology in this manner:

> "Around 1964 a new term appeared in the computer literature to denote a new concept. The term was 'data base,' and it was coined by workers in military information systems to denote collections of data shared by end-users of time-sharing computer systems. The commercial data processing world at the time was in the throes of 'integrated data processing,' and quickly appropriated 'data base' to denote the data collection which results from consolidating the data requirements of individual applications (as I did above). Since that time, the term and the concept have become firmly entrenched in the computer world.

"Today, computer applications in which many users at terminals concurrently access a (usually large) data base are called data base applications. A significant new kind of software, the data base management system, or DBMS, has evolved to facilitate the development of data base applications. The development of DBMS, in turn, has given rise to new languages, algorithms, and software techniques which together make up what might be called a *data base technology*."

Computer Auditing Initiated at State Farm Mutual

There are two aspects to computer auditing. The first involves using the computer as a tool through programs to audit the records of the company in its various fields of activity. The most obvious of those fields are auditing accounting, and financial records. Others include those fields where previous standards can be established in numerical terms and therefore a potential for computer auditing.

The second type of computer auditing involves a group of computer specialists with computer programming experience sufficient to enable them to *independently* review actual programs written by the Data Processing Department or anyone else who is authorized to prepare computer programs.[98] This latter concept requires a cooperative relationship based on confidence that the "auditor" is sufficiently qualified to understand the complexities of the program being audited.

State Farm does both types of computer auditing and finds it not only successful but necessary. The first method of auditing whereby the computer is used to audit financial records was begun in 1972 and placed under the direction of James Wiles, head of the General Accounting Auditing Section, who is currently retired. The second type of computer auditing, whereby specialists examine computer programs to verify that they are performing according to the standards and objectives established for the programs, was initiated in the 1980's after my retirement.

Computer auditing at State Farm had been under study for some time prior to 1972 by both the General Accounting Department and EDP Research. However, it was given its greatest boost as a result of a seminar conducted at State Farm by Robert Courtney, IBM's Computer Security Specialist. Although Courtney's primary message involved use of the computer as a vehicle for building security etc., nevertheless, his seminar gave impetus to the wider use of computerized auditing in terms of "output security" and result-oriented accuracy. The next step was to bring in computer auditing specialists from the auditing firm of the Arthur Young Co. That accounting firm wanted State Farm to sign a contract whereby they would provide the leadership and programming for the initial effort toward establishing that concept in the company. The result was that after meetings with Joslin, the Accounting Department, and EDP Research, the decision was reached to establish a computer auditing function in the General Accounting Department under the leadership of James Wiles.

Financial Modeling by Computer

It may seem strange to the layman to title this section as Financial Modeling by Computer. How else one may ask? It *can* be done without a computer but not efficiently. Therefore, one of the first special tasks assigned to me personally when I joined Joslin in the Comptroller's Office was to establish a Cash Flow Computer Model. It was a considerable task for which I received considerable assistance from others with whom I consulted from the Actuary and Research Departments.

This project was a joint venture including Dale Nelson, an extremely capable Auto Company actuary; Roland Grotbo, a young research specialist; and, other computer specialists from the Data Processing Department whose assistance was made available on a sporadic basis. The project was completed by others after I had returned to Data Processing.

This project was only the beginning of many additional computer modeling projects that have been performed in State Farm since that early pioneering project in 1972.[99]

Quality Control, Project Evaluation, and Training

During this period, we were growing faster than we could train personnel to handle our ongoing projects and at the same time maintain our schedule established for the Real Time System. (Our corporate growth seemingly always had been faster than our data processing ability to cope with it.) The result was a need for serious consideration for improvement in our quality control and a re-evaluation of our projects. In my introduction to this book about its objectives, I promised that we would "tell it as it is" by explaining our problems as well as our successes. Happily we had plenty successes but unfortunately we had more problems than we wanted. The Home Office Departments and the regional offices were our "customers" and not all of them were happy. So we decided to focus on an attempt to turn that around.

Over a two-day period of February 9, 1970 and the 10th, the entire staff of EDP Research closeted to "get to the bottom" of our problems. We agreed to speak openly and honestly as the only way of deciding first what our real problems were and then be equally as honest about methods needed to correct those problems. We in effect "let it all hang out". We may not have solved all of our problems, generally you never do, but the sessions did make us all feel more like a team and not look obliquely at the "other guy" as if he were the problem. It did head us into the proper direction.

One of those problems was a concern that we were providing more resources to the research side of our business than to the everyday projects needed by the users for them to meet "*today's*" needs—they felt to some degree that "let tomorrow" take care of itself. They also told us that we were sending out a "shoddy" product in many instances. I must admit that there was some validity for that feeling for which I personally was somewhat responsible because of the pressure, some self-imposed, to be sure we could meet the Real Time scheduled completion date. That was primarily due to my inherent nature to meet every deadline regardless of how difficult that might prove to be.

The second consideration, in addition to meeting scheduled dates, was an even more important goal of eliminating errors that resulted primarily from under-staffing and insufficient training of new employees, who by now were coming in faster than we could ever foresee—the result of a product that was not up to the standards we had set for ourselves. By the time this two-day self-examination period had ended, we had not cured either problem completely but we did begin a serious attempt at a turnaround.

The third consideration was for a real need for better training and more training. This was perhaps the most important decision coming out of that two-day session. We made the commitment at that time to expand our training staff and training methods which ultimately became a very efficient training unit under the supervision of Ken Christensen. Although, as previously explained, Bill Wilkens was our first training specialist, who by this time had transferred to the Home Office Personnel Department, it was Christensen who was established as our first *full-time* training supervisor. That was as a result of this important session. Christensen laid the foundation for an excellent training staff which expanded its horizons beyond mere program training including additional training needed for programmers to be successful in an insurance environment.

Zip Code Study for Placement in our Policy Addresses

For many years State Farm had wanted to find an easy and inexpensive way to add the zip codes to the millions of policy records stored in our many regional offices. New zip codes appearing on new or transfer applications were already being added to our records as the new or transfer applications were entered into our systems. However, our problem involved those millions of files that represented policy-holders who had been long-time State Farm clients which seldom had correspondence requiring changes in their records. Many, in those years, did not change cars or coverage often, much less move to another address, with the result that some method of getting the zip codes into our records had to be devised. This was an economic necessity because the Post Office to this day *does not mandate* the use of zip codes, although heavily encouraged.[104]

To place this information in the existing records may not seem as much of a task today but until the more powerful disk systems came into use, it was not feasible to attempt such a task except for those policies which for other reasons required the full entry of the individual's address.

It was on January 18, 1971, that we met for the first time to formulate a strategy for the placement of zip codes into State Farm Mutual's policyholder records. A special committee was given the assignment to put this strategy "in gear" with the aim to have the zip codes placed into the records in the shortest period of time commensurate with the most inexpensive method possible. It must be remembered that at that time, only the 5-digit code was in use. The initial 5-digit code had been installed on July 1, 1963 with a rather liberal grace period for its implementation. (In 1983, the code was expanded to a 9-digit code with the possibility of a future expansion to 11 digits.)[104]

Even so, this committee ultimately was able to get the zip code into most of our records—hopefully accurately. The decision was to purchase a computer software package from McCormick-Allen which was quite successful but was not perfect. Among the individuals who during that period did much of the work in completing that task were Dick Andes, Paul Shaw, and Al Furst.[102] Considerable effort was also expended by the computer operators to make that package fit our needs.

Computer Output Microfilming

The last of the major successful research projects which were initiated during this computer era was the introduction of computer output microfilm. Kenneth Reeser supervised the original investigation of the merits of this concept for State Farm. The short-hand title for this process was COM for Computer Output Microfilm or sometimes designated as computerized microfilming.

State Farm began its serious research into this process on May 22, 1969. This began with a discussion with representatives from the Kodak Corporation which was one of the pioneers in this field with its newly announced Kodak KOM 90 microfilm drive. This unit read computer created information from a reel of computer written magnetic tape and would convert it into sheets of 4″ x 6″ microfiche film. This microfiche, being transparent, could be read from a microfiche reader which was especially designed for that purpose.

A number of companies were beginning to announce devices as competition to the Kodak KOM 90. On June 17, 1969 we visited the 3M Corporation in Minneapolis, Minnesota to get a first-hand explanation of the 3M COM device. Shortly thereafter, Kenneth Reeser was placed in charge of further research into this process which ultimately resulted in the establishment of a COM Microfilm Unit for State Farm Mutual.

This program received its major management impetus as a result of a report Reeser presented to the Electronics Committee on February 9, 1971. The next step was the establishment of a "test program" involving the use of the facilities of a microfilm service bureau located in Peoria, Illinois. After about a year of successful microfilming using the service bureau, it was decided to install our own microfilming unit.

After Reeser and his Unit examined the advantages and disadvantages of the COM systems on the market, the decision was reached to purchase the Kodak KOM 90 System.[15] There were several important technical differences between the available systems. We chose the Kodak concept as being the best. This was the beginning of a very important effort to reduce the immense task of not only printing paper on computers but to reduce the size of such output through the use of the 4x6 microfiche film.

Projects Studied but Not Implemented during Era

Although not implemented, two projects of considerable interest were studied and rejected.

The first of the two projects was initiated by a visit on October 23, 1969 by representatives from the "Information Corporation". They wanted to enter into a contract which would provide them a free rein in studying and advising State Farm on ways and means for increasing the efficiency of our computers companywide. On the surface that may have appeared as a very sensible thing to do—after all, our technicians admittedly could have benefitted from possible new operational and programming techniques.

The contract was to cover an extended period of time during which this corporation would have studied both how we operated the hardware and would have reviewed our software concepts. They wanted to work very closely with our technicians and programmers which would have been excellent training; but, it would have been a heavy impediment for our programmers who were already under a heavy burden of trying to solve the current problems and meeting the crucial Real Time deadline.

We discussed this with Roger Joslin, Vice President and Comptroller, who had assumed the top data processing management responsibilities from Marquardt only a mere month earlier. To his everlasting credit after carefully studying the pros and cons of the contract and after listening to our reasons for rejection, which were directed at both the substantial cost in dollars as well as organizational disruption, agreed with us and rejected the contract. It was indeed a wise move.

Another quite interesting project which had been brought to the attention of Joslin and Vincent pertained to a suggestion that State Farm might benefit by establishing a Service Bureau operation. For those of you not familiar with Service Bureaus, it was a concept where a small company could lease or purchase one or more computers along with printers and other necessary peripheral equipment, and then contract with clients such as insurance, banking, hardware businesses, etc. to do their entire computerized-type of work for them. These Service Bureaus would print billings, handle payments, etc .

Their contracts need not be limited to small companies. Many lesser contracts were negotiated with large companies such as State Farm to do a small, specific type of work which the large companies felt could be done less expensively by the service bureau than for the large company to make a comparative large capital investment for a small, short-lived project.

At that time, large corporations with excess computing capacity were entering the service bureau business. At that time we had somewhat of a concern that the very powerful 370 Systems, scheduled for use in the Real Time environment, might have more power than we could use efficiently. Hence, it made sense to examine that potential with other companies that had either entered into that business or had contemplated such a move. Furthermore, despite our enormous company policyholder growth, it still was not clear at that time, which was before the complete implementation of Real Time, whether we would have excess or insufficient computer capacity. Part of that dilemma stemmed from the fact that we were not completely sure just how much of the System 370 power would transform into excess power for us at that time.

Nevertheless, Joslin suggested that a complete and thorough study be made of this prospect. We visited several companies including Farmers Insurance of Pekin and others to get their viewpoints about the pros and cons of such a venture. Among the several companies visited, we received mixed views but the more prominent reaction was negative.

After informing management of our findings, the concept was dropped and never again discussed. That was emphatically in tune with State Farm's goal of being primarily in the insurance business.

Data Processing Conferences, Conventions, and Seminars

Data processing during that era had become "big business" everywhere in the country and it was no different for State Farm. It had become one of the largest departments within the company, destined eventually to become the largest. One of the demands of a department of that size is to communicate well with the other departments, especially those which were increasingly dependent upon the data processing output being performed for those user departments. That requirement resulted in more and more conferences with other departments within the company, attendance at national data processing conventions, and even an increasing number of seminars with equipment manufacturers such as IBM.

Among the different types of conferences held during that era, no doubt the most important to us were the Regional Data Processing Managers Conferences. The very first conference of that type was held in Bloomington in 1960. (See Chapter III.) The most recent, immediately before this era, had been held in Bloomington on October 21 through 23, 1968. That was the last data processing conference under the direction of Carl Marquardt.

It may be interesting to note the thrust of the agendas of those conferences over time. The 1968 conference was a mix of such subjects as the three day work week, computer utilization, technologies on the drawing board, computer leasing by the Dearborn Computer Corporation, and Real Time. The DP Managers attending that conference, listed by regional office, were:

Manager-Office	**Manager-Office**
Don Rynell-Illinois	Bill Lowrie-Northern California
Don Morrell-Michigan	Wally Zimmerman-North Central
Carlton Morris-Eastern	Gene Shaw-Southwestern
Walt Hayes-Southeastern	Gerald Norton-South Central
Steve Di Sefano-Pennsylvania	Sam Barker-Missouri/Kansas
Ed Parero-Ohio	Al Creasy-Northeastern
Norm Cover-Florida	Leon Overbeck-Mountain States
Bob Franklin-Mid South	Bob MacGregor-Canada
Bill Barnette-Southern	Dick Marley-West Central
Joe Giroux-Northwest	Dave Homewood-So. California
Jerry McAhren-Lake Central	Ron Keene-Seaboard

By May 1970, an attempt was made to reduce the travel distances for those attending the DP Managers Conferences by holding two conferences on the Monday & Tuesday of successive weeks, using the same agenda, in Washington, D.C. and Denver, Colorado:

May 11-12, 1970 **Statler Hilton Hotel** **Washington, D.C.** **Regional Manager** **Attendants**	**May 18-19, 1970** **Writers Manor** **Denver, Colorado** **Regional Manager** **Attendants**
Al Creasy, Illinois	Bill Lowrie, N.Calif.
Bill Barnette, Alabama	Sam Barker, Northwest
John Nonnenmacher, N.Eastern	Dave Homewood, S.Calif.

Regional Manager Attendants	Regional Manager Attendants
Robert MacGregor, Canada	Walton Ohler, Westlake
Carlton Morris, Eastern	Leon Overbeck, Mt.States
Don Morrell, Michigan	Bob Hilsabeck, West Cent.
Ron Keene, Lake Central	Jim Yates, Missouri-Kansas
Ed Parero, Ohio	Walt Zimmerman, N. Central
Ralph Yanike, Seaboard	Peter Magistad, N. Central
Ron Toussaint, Pennsylvania	Gene Shaw, Southwestern
Gerald Norton, South Central	Bob Franklin, Mid South
Walter Hays, Southeastern	Richard Marley, Illinois
Norman Cover, Florida	

In addition to the managers, a number of Home Office data processing executives attended and gave presentations at the conferences. Arthur Dierkes was chairman for both conferences. The agenda for those conferences included a wide variety of subjects led my a number of the regional managers and data processing executives from Bloomington.

Some of the topics included Auto Company priorities, Real Time planning and progress reports, Fire Company progress report, quality control, teleprocessing, and a round table discussion of the most important questions on the minds of the regional managers directed to the Data Processing executives in attendance. That is only a sample of some of the more important sessions held at that conference.

Perhaps one of the major benefits arising from such conferences was the opportunity for the regional DP Managers to get a first-hand feel of what the Home Office people were planning and more importantly for Home Office data processing executives to get a first-hand "feel" about some of the problems the regions were encountering—often as a result of Home Office projects or program errors. As a result, some of us from the Home Office would have a briefcase full of suggestions or complaints needing immediate attention upon our return to Bloomington.

Association of Computing Machinery (ACM)

One of the technical associations to which I belonged and in which I had a personal interest, as a national forum, long before a local chapter was formed in Bloomington was the Association of Accounting Machinery. In those early years, those of us interested in this quite technically-oriented organization, paid our own dues. This was because I felt that our technicians would find this association of little value at the national level until enough interest developed for a local chapter.

That interest did develop under the leadership of Peter Browne, one of our more technically-oriented systems programmers, with the result that Browne was the moving force in the formation of a Central Illinois

Chapter. (Although I maintained my national membership for years, at this time I had become an Assistant to Joslin and had dropped my national membership.)

Vincent as Chairman of the Electronics Committee, asked the committee to review a request by the local chapter for support which had not been given previously until the chapter could prove viability. In a memo addressed to the Electronics Committee, dated October 27, 1972, Vincent wrote:

> "... The Central Illinois Chapter of ACM was formed on March 17, 1972. Members, generally, are programmer/analysts with from one to five years of experience in data processing. Average attendance at a monthly meeting is about 50.
>
> "... We agreed last spring that we would not support ACM membership until the local chapter demonstrated viability. It seems to me that it has done just that, and I agree with the attached proposal concerning Company support ..."

The committee after careful consideration did approve this recommendation and supported the payment for local dues for those members who participated regularly as verified by his/her supervisor.[111] The national dues were paid for employees who were officers of the local chapter. This support was set a $10 per member for the local chapter and $25 per individual for the personal membership dues.[119]

Data Processing Management Association (DPMA)

The Data Processing Management Association is an organization which directs its activities much less to the technical side of data processing but primarily towards the management concerns and activities of its members.[112] Basically, the DPMA organization is national in scope but is international by virtue that it has chapters in Canada. State Farm programmers and management personnel have had wide spread interest and involvement in the local chapter. A few of State Farm's data processing management personnel have not only become officers of the local chapter but also as officers of the national organization.

State Farm also supported local members of DPMA who attended the local association meetings regularly and supported them for the dues and limited costs for local officers involved in the work of the national chapter.

The Data Processing Management Association is an outgrowth of the former National Machine Accountants Association, generally known as the NMAA. The NMAA was of interest primarily to accountants and "machine men" as they were sometimes called in the early days of IBM Electric Accounting Machines, which were precursors of commercial computers. Herman Salch and Jim Hickey were two of the more prominent men from State Farm who held offices in the Peoria Chapter of the NMAA.

State Farm, from the very founding of the DPMA organization has had a large contingent attend national meetings. Subsequently, upon the formation of a local chapter, many State Farm data processing personnel joined the local chapter and continued to participate in local chapter activities.

The two State Farm'ers who were probably the most active in the overall activities of this association during that era were Merton Walker (retired) and Kenneth Christensen. Walker was the first president of the local chapter, the "Twin City DPMA", and therefore is generally considered the founder of this chapter. Christensen, also a former president of the local chapter, and Walker are the only two officers of the local chapter who became vice presidents of DPMA International.[112]

Many State Farm data processing employees have held important offices in the Twin City chapter. Those who held offices, many as president, during or immediately prior to this Computer Era IV were:

Dick Andes	Jim Hickey	Carol Oien
Ken Christensen	Tom Krause	Mert Walker
Bill Goodmon		

State Farm employees have continued to support this organization in large numbers and for that reason I have limited the names to those early chapter pioneers. (I fervently hope I have not omitted anyone who qualified.)

Guide International

Guide International was an organization founded expressly for the benefit IBM commercial computer users. In the book "IBM's 360 and Early 370 Systems" it is defined as "an organization of IBM installations with primarily business computing applications."

It was an organization which held international conventions in the United States, France, and other countries worldwide which had a substantial number of IBM computers installed. As I recall, the early conventions of this organization were primarily a showcase of IBM computers with complementary conferences explaining IBM's equipment and how that equipment worked. These were relatively small sessions in the early years where company delegates could ask questions of and "spar" with the IBM personnel in attendance. Rather quickly, these meetings became huge and quite formal as the use of IBM computers proliferated.

In time as those conventions became more formal, many corporate users would send representatives to Guide International for delivery of papers of general interest to the audience. My paper on State Farm's

Real Time System was delivered in Paris, France in 1965. (See details in Chapter IV). In those early years, State Farm Mutual would limit most of its attendees to data processing management personnel.

David Vitek, Assistant Vice President-Data Processing at State Farm, informs me that the thrust of Guide International has changed considerably since my retirement in 1980. Currently, the emphasis of the meetings has shifted toward sessions which permit IBM equipment and software developers to meet with and discuss various computer elements with company representatives attending the convention. Gradually there has been a shift toward information about software and less and less about hardware. The computer showcase element is virtually gone.

Other important conferences attended only occasionally by State Farm's top data processing executives or managers were the Joint Computer Conferences held in the spring and fall each year. Also over the years, IBM would invite top level data processing executives from prominent insurance companies to attend IBM's Insurance Symposiums held generally in Poughkeepsie, New York. State Farm would usually participate.

I must emphasize in closing the discussion about those data processing conferences and symposiums, in tune with the company's well known reputation of being very conservative, relatively few of those many available conferences were attended by State Farm personnel, either by management or the general work force.

Foreign and Domestic Visits and Visitors

The impact of the many projects described above continued to catch the attention of other insurance companies in the USA as well as foreign companies. That had been the norm ever since State Farm initiated its processing systems in 1955. It appeared, however, to reach its peak during this era. That may have been an illusion, but, if true, it may have followed the pattern of the effect of size as did so many other facets of data processing in later years. It seemed that as the company grew toward its immense size, more projects were on the "drawing board" but each did not have the impact on the company as a whole as each new project did in earlier years. The result was, I believe, that each new concept created less publicity and therefore fewer visitors. However, this era still had its many visitors and we in turn often reciprocated, especially domestically.

Among the foreign visitors including the dates of the visits and the companies represented were:

Date	Visitor(s) and Country
7-15-69	Dr. Lacosti led a group of five French Data Processing Executives to tour our facilities.

Date	Visitor(s) and Country
9-21-70	Japanese Data Processing Executives discussed our Real Time System with us.
10-26-70	Dr. Hans Willy Schaefer, an old friend of State Farm, who was Data Processing Vice President of Allianz Insurance Co., Munich, Germany visited with our data processing executives.
10-29-70	Messrs. Maurice Brans and Richard Van Wijk of an insurance company in Holland toured our data processing facilities.
1-25-71	Dr. John Kjar, a data processing executive of the Denmark Insurance Co. of Copenhagen toured our Data Processing Center.

Among the visitors from companies within our country and in turn companies which we visited to learn about them were:

Date	Visitors and domestic companies
11-6-70	Robert Menick, James Haley, James Connally and Edward Gleason—data processing executives and old friends from the Allstate Insurance Co, Northbrook, Illinois visited our data processing executives.
11-11-70	State Farm data processing executives visited the CNA Insurance Co., Chicago, to tour their data processing facilities.
7-15-71	Roger Joslin and Myron Willke visited the Nationwide Insurance Co., Columbus, Ohio. We discussed their financial modeling techniques with President Jeffers, Dr. Hogan, and Brad Kirk.
5-15-72	Myron Willke visited Ohio State University upon its invitation to describe our Real Time System concepts to its data processing faculty and students.
12-11-72	Messrs. Brad Kirk, Bill Voekel, and Paul Cherry, data processing executives of Nationwide Insurance Company visited with our data processing executives.

Those were the principal executive visitor information exchanges regarding data processing projects and computer installations that were experienced during Computer Era IV.

Data Processing Moves into New Corporate Headquarters

EDP Research moved originally to the TAB Building on August 16, 1966. After nearly six years of occupancy and a name change to the "Data Processing Department", the department moved again after spending the last day in "TAB" on July 28, 1972. The move this time was to the new Corporate Headquarters along with the Administrative Services Department.[106] Those two departments moved from the TAB and Owens buildings as the first departments to occupy the new headquarters even though the complex was months away from completion.

The move was greatly appreciated not only because of the new and beautiful surroundings, but it was the first time in years that the department was not scattered in several buildings around the city. According to the ALFI NEWS, when describing the move, reported:

> "As expected, there are some inconveniences due to construction, such as using different parking lots or different stairs and doors, according to where the construction happens to be going on.
>
> " . . . John Holder, Assistant Vice President of Administrative Services, said, 'When everything's straightened out it will be real fine. Of course, they're going to move my mountain.' (A hill of black top soil outside his window that will be spread around the outside of the building before grass is planted.)"

Initially, the Data Processing Department was moved temporarily to 2nd floor of Building "B".[109] The Administrative Services Department, our companion tenant of the TAB Building, moved initially into portions of the service buildings SB and SC.[110]

The new Corporate Headquarters originally was a complex of six buildings, with construction not fully completed upon the arrival of this early group of tenants. Because of the dire need for space, the new building had many unfinished areas including the need for carpeting, the removal of mounds of dirt still piled outside of the buildings, an incomplete atrium, and similar unfinished tasks. The most important unfinished task from the viewpoint of data processing was that the future home of the department, the 2nd, 3rd, and 4th floors of Building "A" also were not completed.

During the six-year tenancy of TAB, many changes had occurred which made this move all the more significant. In 1966, EDP Research was a section of the Service & Systems Department involving approximately 90 individuals of which about 65 were in EDP Research. This number did not include the entire group of employees in the Home Office Data Processing section. Both EDP Research and HODC reported to Carl Marquardt, Vice President-Service & Systems. By the time of the move to the Corporate Headquarters, EDP Research and HODC had been combined into the Data Processing Department with an employee count of approximately 460 employees under the direction of Dr. Norman Vincent, Vice President-Data Processing. The data processing functions were no longer a part of the Service & Systems Department. Marquardt remained in charge of Service & Systems for only about two years after the move to the new building when he retired because of poor health.

Interestingly, data processing activities had an important impact on the basic structure of Building "A". The architectural firm was Eberle & Associates of St. Paul, Minnesota.[107] The construction firm which built the structure was the Utley James Company, Pontiac, Michigan.

According to the ALFI NEWS, ground was broken for the new headquarters on August 1, 1970. As a result of sheer coincidence, the new headquarters building was being planned and built over exactly the same general time span as the was the Real Time System in EDP Research. This turned out to be a fortunate coincidence because in November, 1970, as data processing and the building designers were meeting to review their respective planning processes, it became known that data processing would need both the second and third floors capable of bearing weight loads greater than originally conceived. This was a result of our thinking at that time that the large, heavy, and powerful computers would be on the third floor of Building A and the heavy random access disk units would be immediately below on the second floor.

Although, the final Real Time design was changed considerably, it required an immediate change in the basic plans for those two floors. As a consequence, on November 24, 1970, four of us from building design and data processing flew to Minneapolis, Minnesota, to visit the architects for increasing the load capacities of the beams for those two floors. Using the company plane on an emergency basis immediately before Thanksgiving Day, the four making that trip were Jim Turner, Jack Harris, Bob Solomon, and Myron Willke.[108] Although the ultimate Real Time concept when finally installed did not utilize those floors as originally planned, the company has been fortunate that those two floors were reinforced giving data processing much more flexibility for its heavy equipment than would have otherwise been possible.

Ultimately, as Building A was completed, floor A4 was assigned to data processing executive, programmer, and clerical activities, whereas floors A3 and A2 had raised floors and were assigned to the computers and data processing operations clerical activities. Much more will be said about those activities in the next chapter.

Closing Out Computer Era IV

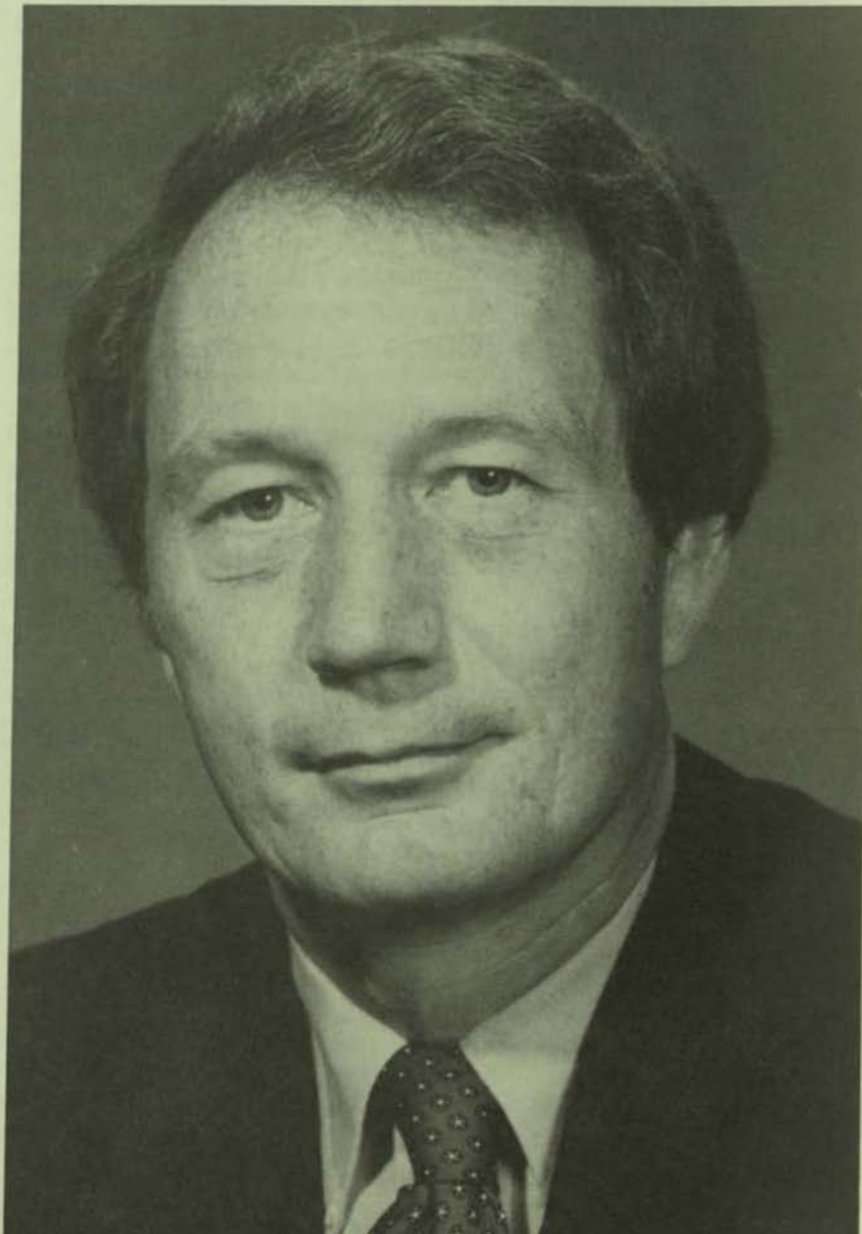
As we closed Era IV, President Nixon had won re-election easily with not the slightest suspicion that he would never complete his second term because of the Watergate scandal. We were still in the midst of the Vietnam War and also in the first stages of one of the most inflationary periods that the country would ever experience. State Farm also had weathered in 1969 and 1970 one of its worst loss periods ever and had turned it around quite quickly and successfully. However, that more favorable loss picture would not remain with us forever as the we will discover in the next chapter.

The company had added three new regional offices during the four years, 1969 through 1972: Westlake Village in California, Sunland in Arizona, and South Texas in Austin. This made our total of 25 regional offices the maximum number the company would occupy for the next 17 years when the 26th office was opened in Tulsa, Oklahoma in 1989.[32]

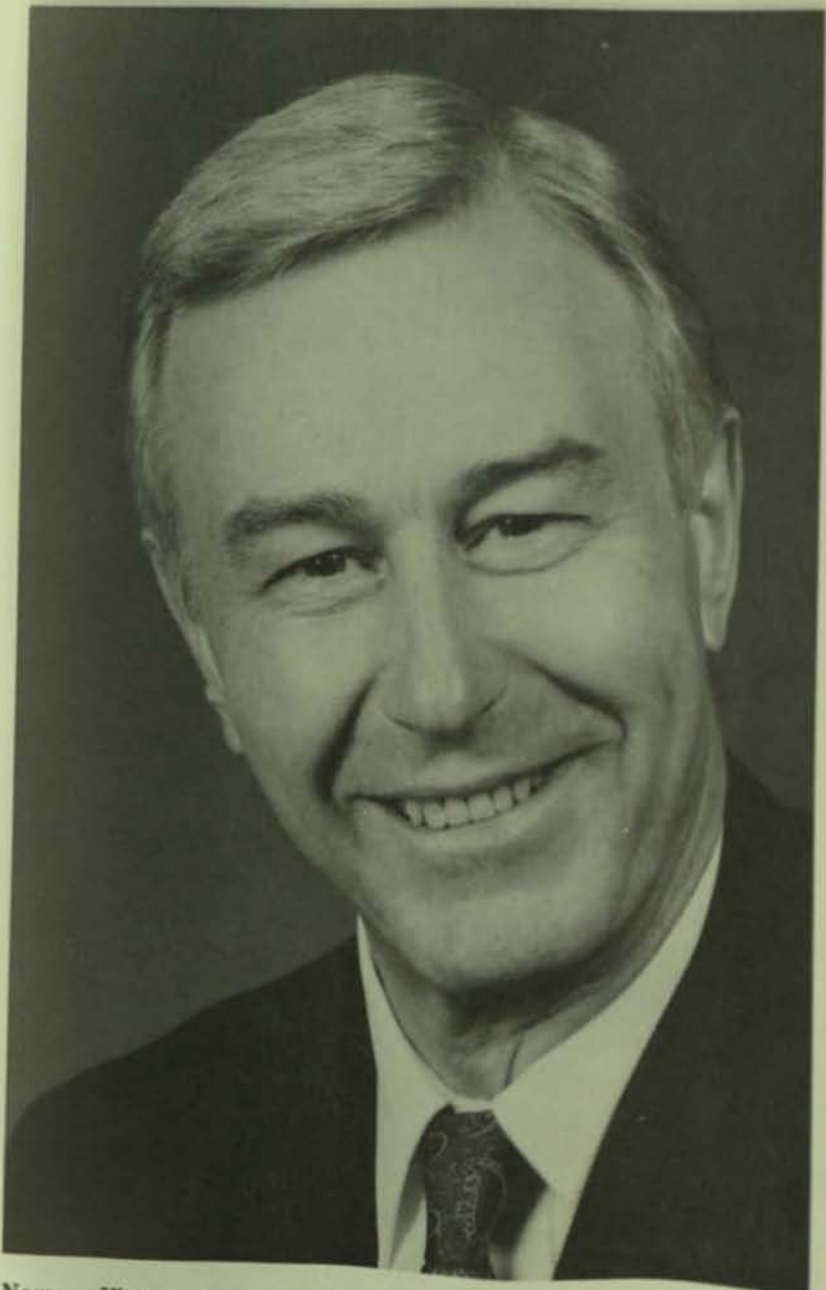
By the end of 1972, State Farm had 25,188 employees, 11,048 agents, 13,373,231 auto policies in force, over $13 billion of life insurance in force, and over $364 million of fire direct premiums written. We were still growing at a very substantial pace.

Data processing had also grown at a rate that almost doubled its employee count of well over 300 in the Corporate Headquarters alone, not counting the data processing departments in the regional offices.[113]

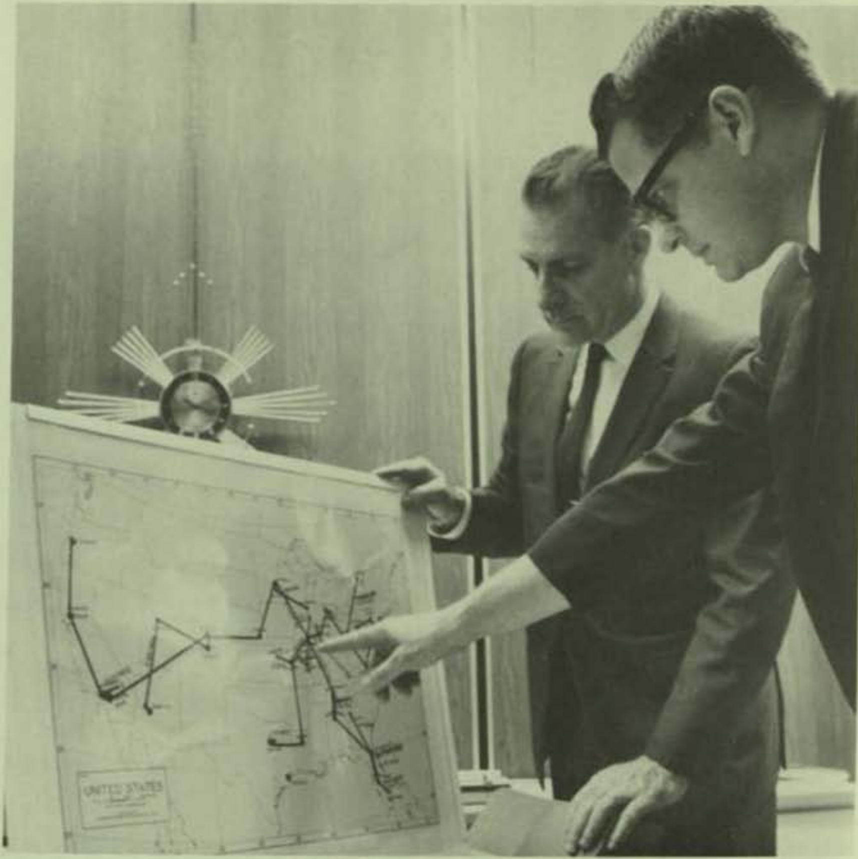
The department had been moved to the Corporate Building B waiting for Building A to be completed as its permanent home and for the completion of the entire 6 building complex. As we closed out Computer Era IV, we were also closing out the Real Time era and looking forward to Delta.



Roger Joslin, Senior Vice President and Treasurer.



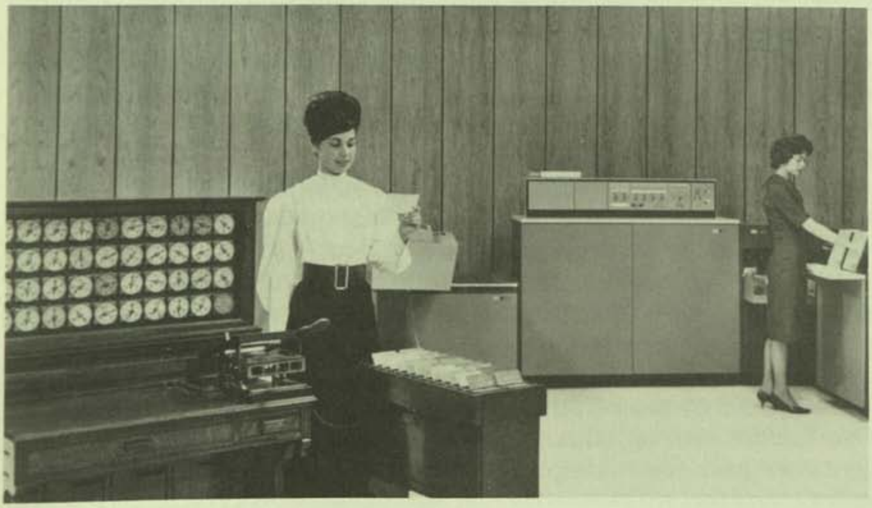
Norman Vincent, Vice President — Data Processing.



Above) Map of State Farm's First Countrywide Teleprocessing Network with M.G. Willke and Robert Deems — 1969.

(Right) Robert Deems, Assistant Vice President — Data Processing.

IBM 370/Model 158 used for Delta in the Regional Offices — 1973 and throughout 1970's.



Census Systems — 80 years apart — Hollerith for 1890 Census & IBM 360 systems for 1970 Census.

CHAPTER VII

Delta Processing and Integrated Systems

Computer Era V — *"Settling In"*
(1973-1980)

State Farm as a corporation and as a data processing function had become so large and intricate that its size and increasing growth rate made it impossible to continue providing the same degree of details of the individual employee accomplishments or of the many types of computerized equipment in this chapter as was possible in previous chapters. Hence, in line with the caveat expressed in the introduction to this book, from hereon only key events, major personnel accomplishments, and the primary computer systems will be discussed.

This computer era demonstrated a new philosophy whereby the effect of the new computer system installations became almost a ripple rather than like a huge ocean wave which epitomized past implementations. At this time, each facet of the system was beginning to be introduced piecemeal with the long-range effect that changes from one system to another were almost indistinguishable. As indicated in the preceding chapter, no longer were complete computer systems installed as one massive program. The company simply was too large to handle such an upheaval and therefore we called it "managed change." This type of system implementation is best illustrated by a time-line for all computer system installations from the first 604 System installed in 1955 as found in Figure #7.

It will be noted that the time line of computer changes was nearly a flat line during Era V meaning that the impact of any new system or system concept being introduced one part at a time in an organization as large as State Farm was rarely felt by the vast majority of State Farm's employees. This was a major contrast to the installations of the 650 and 1400 systems when an entire system was installed over a relatively short time period with an impact that was felt throughout the corporate structure from top management down through nearly every regional office employee.

Despite possible arguments to the contrary, when considering the size of the corporation, the number of experienced technicians or lack

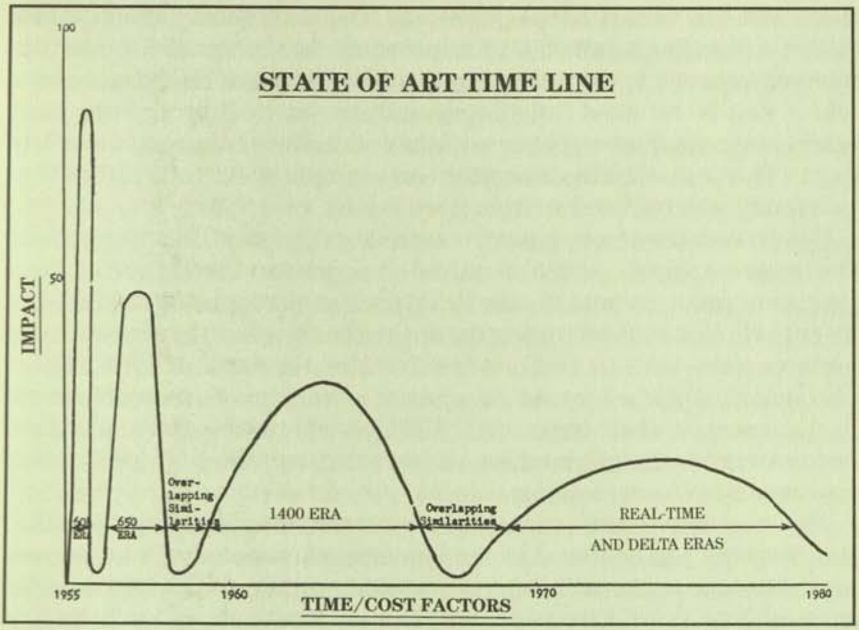


Fig. 7. Time Lines for the various computer installations reflecting the lesser impact.

thereof and the level of technical expertise, the different strategies used for each successive era happily worked best for that era. The slow piecemeal concept simply would not have worked for the 1400 System era because the technologies were changing at such a pace that whole new concepts were being introduced so rapidly that within a short time period our system would have been completely outmoded and incompatible with the newer 360 System technology. Another case in point was that the card technology of the 650 System was absolutely incompatible with the 1400 System which succeeded it. For example, it would have been virtually impossible to hold the punch cards in storage for years and years waiting for them to be converted to magnetic tape. It would have been impossible to machine-read them efficiently in a limited time frame. Even under the accelerated schedule which we used for the 1400 System conversion, the Mountain States Office, the last office converted, had to retain its cards nearly four years. Adding a few more years would have made those cards unreadable or otherwise unusable.

Era by era, the change was gradual and obviously the current "managed change" concept was the only one appropriate for Era V and subsequent environments. In addition, that era found data processing in State Farm adding so many employees because of the great number of new projects in existence at all times, that the introduction of new computer systems was not the all-encompassing activity of the department as it had been in the previous eras. The single most important fact which will make it possible to improve all future systems under the current concept is that all programs and data are stored on media which can be retained indefinitely and can be read by any new high speed computer system because of the conversion technology currently in use. That was not true during the early computer eras especially when much of it was on hand-written documents.

Hence, because changes were constant and gradual, in writing about the major subjects which required the primary attention of data processing management during Era V, each subject shall be discussed in its entirely as it evolved during the entire time span of that era, i.e. in its entirety form 1973 to 1980 rather that discuss parts of each subject chronologically year by year. As a result, as each major item of interest is discussed, it shall begin with 1973 or whatever year it was first encountered and explained for all years through the year 1980 before moving on to the next major subject.

The most important example of the new "managed change" installation strategy can be found in the implementation of the Delta System and subsequent alterations to Delta which required nearly the entire span of Era V for its completion. Let us now look at State Farm's environment at the beginning of the era which made the philosophy of "managed change" an absolute necessity.

The strategy of Computer Era V was built primarily around the concept of increasing the amount of work handled in each office via the increase of policies per employee made possible through the increased efficiency of the computer concepts, the many new programs being devised which enabled all employees to handle their work more efficiently, and the enormous increase in computer power that was a result of much more powerful and diversified types of computers.

Since Fire Company data processing operations were being slowly integrated with the Auto Company operations over the preceding decade, during this era we will consider most figures as a combination of the auto and fire company data processing operations as a single operation, especially in the regional offices.

During the life span of Computer Era V, from Jan 1, 1973 through December 31, 1980, we also find that most insurance operations for State Farm Mutual and State Farm Fire were performed in the regional offices with the exception of Health Insurance operations which were gradually decentralized after a long period of centralization within the Corporate Headquarters.

Corporate and Data Processing Growth During Era

From 1972 to 1980, we find that the number of agents increased from 11,048 to 14,336 whereas regional office employees, Auto and Fire combined, increased from 21,986 to 27,349 or approximately 24.4%.[115]

Total company employees for all companies increased from 25,188 in 1973 to 31,542 in 1980 for an increase of 25.2%. The significance of those two percentages is that employee growth throughout the company was a nearly uniform 25% over the 8-year period.

Over the same period automobile policies in force grew from 13,373,231 to 22,104,252 for an increase of 65%; and, fire direct premiums written grew from $364,219,900 to $2,534,639,125 for an increase of 595.9% or nearly 6 times. (Having measured Fire Company growth for all previous eras in terms of direct premium written, I continued it here for uniformity of measurement.) Life Company insurance in force increased from $13,410,405,896 as of January 1, 1973 to $52,733,307,000 by the end of 1980. Those of us who were privileged to work at State Farm during those years of continuous growth should be extremely gratified. The organization as a whole certainly must have been doing something right! (That is equally true today.)[127]

Considering only Automobile Company employee totals and auto policies in force figures for 1973 and 1980, respectively, the policies per employee figures also showed a phenomenal increase. In 1973, the Automobile Company had 20,084 employees servicing the 13 million plus policies for a policies per employee (PPE) figure of 666 whereas in 1980 the comparable figures of 23,071 employees servicing 22,104,252 policies produced a PPE figure of 958 or an increase of 43.8%. This means that the number of policies handled by each employee increased by nearly 44% over an 8-year span. It is tempting to credit that increase entirely to the advances in the computerization of the work being processed but that would give no credit to other factors such as better employee training and better management etc. Nevertheless, it is indisputable that the steady increases in PPE since 1955 is substantially a measure of the product of computerization.

Meanwhile the Auto Company's share of the market rose from approximately 11.5% in 1973 to about 16% in 1980 whereas the Fire Company increased its share of the Homeowners' market from 11% in 1973 to about 15% in 1980.[116]

The Data Processing Departments of the Automobile and Fire Companies became one department during that era. In 1972 there were 482 data processing employees when combining the Home Office totals for the auto and fire company departments. By 1980, the department had grown to be the largest in the company and there was no end in sight for the demand of new projects that were thrust upon the department for computerized processing. There were 811 data processing employees in the Home Office to meet that demand.

The Economic and Corporate Climate of the Era

As we began the era in 1973, the company's Cost Of Living Adjustment (COLA) program skyrocketed. It moved from 126% to 135% over the first nine months of the year and continued at an even greater pace for much of the remainder of the era. This COLA percentage was calculated on a 1967 base of 100%. As the increases continued at an ever increasing rate during the mid and late 1970's, serious thought had to be given to the fantastic financial burden it placed on State Farm and similar large corporations. To State Farm's great credit during those stressful times, it remained religiously with the COLA program while some of our large competitors made alterations in their COLA programs. This decision permitted State Farm employees to keep abreast of the extraordinary inflation of that period.

The horrible gas shortage at the beginning of that era during 1973 and 1974 added to the inflationary pressures. That shortage was primarily the result of an OPEC oil embargo which was very effective in the USA and world wide because of the heavy reliance on Mid-East oil. The gas shortage caused horrendous lines of cars at gas stations and became so bad that Vincent asked me to chair a committee of data processing representatives whose task was to determine the impact of the energy crisis on the Data Processing Department and its employees. The thrust of the study was to anticipate the problem before it became critical and recommend possible solutions.[26] The committee completed such a study and recommendations. Luckily, the crisis ended before the emergency measures we had formulated were needed.

That era also was one of considerable employee movement not only to and within the Corporate Headquarters but it was necessary to continue use of other buildings within Bloomington. Those moves were far too frequent to enumerate here except to point out that even with the size of the new Corporate Headquarters Building, we continued to utilize part of the Grossman Building until the mid-1970's as well as occupy a portion of the Illinois Data Processing Annex as a result of the constant growth of the Data Processing Department. Furthermore, the turnover rate in data processing was only about ten percent.[117] The company's COLA policy and other employee benefits resulted in a high rate of retention of our employees.

The continuing policy in force growth also required considerable space planning within the regional offices at that time. For example, in a space planning meeting between the Management Planning Department and Data Processing on July 31, 1973, Al McKinley identified eight regional offices which were in the process of increasing their floor space approximately 33%. Offices with 150,000 square feet of space were being increased to 200,000 square feet, etc. This was to become only the "tip of the iceberg". From that period on, it became an ever-increasing major task to keep ahead of that growth in the Corporate Headquarters and all regional offices—especially since we were holding steadfast to our policy of no more new regional offices during that era.

Data Processing Information Exchange Vastly Improved

Another corporate concept which had been introduced in recent years as discussed in the preceding chapter was the role of the regional consultant. By mid-1975, as a result of a Superintendents Zone Conference in Austin, Texas, a few changes were suggested and accepted which by way of the regional consultants improved communications between the regional and corporate data processing departments.

The thrust of that change was the introduction of the Data Processing Transmittal Memorandum which resulted in a two-way communication process and thereby benefitted both the regional and corporate data processing functions. As this change was first instituted in the mid-1970's, each month the Regional Data Processing Manager would send to the consultants information about the important events that had occurred in the respective regional data processing departments. This might include supervisory changes, equipment installations, problems encountered that may have universal usefulness, and similar information of companywide appeal.

The consultants would consolidate this information and add information from corporate support groups about items that would interest or even affect the regional data processing functions. The consolidated information then was published as feedback to all regional offices. That publication was quite helpful to the regions and is still being published.

One request of the Regional Data Processing Managers which was submitted at that Texas meeting and at other times, which was not adopted, was for the consultants to make multiple visits, at least two, to each office each year. The cost of such a change simply did not warrant it.

In that connection, it may be of interest who the Regional Data Processing Managers were during that era. In 1975, those managers were:

Region	Manager	Region	Manager
Illinois	Dave Smith	Canada	Bob MacGregor
N. California	Bill Lowrie	Michigan	Wes Johnson
N. Central	Peter Magistad	W. Central	Bob Hilsabeck
Eastern	Carlton Morris	Southwest	Frank Smeltzer
Alabama	Bill Barnette	Southeast	Walt Hayes
S. Central	Gerald Norton	S. California	Dave Homewood
Pennsylvania	Ron Toussaint	Mo./Kansas	Henry Lichus
Northwest	Sam Barker	Ohio	Ed Parero
Northeast	John Nonnenmacher	Indiana	Marion Dortch
Florida	Norm Cover	Mt.States	Leon Overbeck
Seaboard	Ralph Yanike	Mid-South	Bob Franklin
Westlake	Bob Sauter	Sunland	Bob Seath
Texas	James Cross		

By the end of the era in 1980, only three of the above named managers had moved on to other duties and replaced. Ron Mitchell had replaced Wes Johnson who transferred to the Corporate Headquarters in Bloomington; Jim Simpson replaced Henry Lichus; and, Ed Davis replaced Ralph Yanike. Sadly, I must report that Bill Lowrie, Leon Overbeck, and Dave Smith are all deceased.

During that period, the consultants at varying times were Gene Shaw, Jim Weikel, Dick Marley, Paul Brandt, and Jerry Smith. Of those five men, only Jim Weikel and Jerry Smith have continued to work in that environment.

The transmission of computer programs and documentation between corporate and regional offices also improved vastly during that era. Programs and documentation were sent by telecommunication circuits eliminating the cumbersome mailing of the many magnetic tapes which had been the method used for transporting programs for more than a decade. With the advent of Real Time, much of the detailed documentation formerly sent to the regions via the P&S Manual was entirely eliminated.[100] That information was transferred to a new set of "RT Documents" (Real Time Documents) which provided the regions with the detailed information needed to operate their computer systems. That information included instructions concerning the handling of the data bases, jobs, flows of work, record formats, etc. RT Documents are still in use today. However, with the advent of Delta, no program source code was sent—merely text information and Job Control Language (JCL). The only remaining information sent by magnetic tapes was the detailed information required for MVS and other operating systems.

Finally, according to Douglas Rixstine and Bill Cockrell of the Service and Systems Department, sometime in 1977 the Procedures & Systems Manual, (P&S Manual), was superseded by the Process Guide. The Process Guide was written on a topic basis, procedure by procedure, not on a work flow basis and is still currently in existence. To clarify further the different purposes of the RT Documents vs the Process Guide, the Process Guide furnished vital information to the Operating Divisions whereas the RT Documents furnished instructions for the operations of the Regional Data Processing Departments including equipment.

Data Processing Executive Office (DPEO) Formed

As revealed in Chapter VI, the Data Processing Department was initially moved to the new Corporate Headquarters Building B, second floor and remained there until the permanent location in Building A, the top two floors, had been completed for data processing occupancy. This was a gradual process extending into 1973 culminating with the establishment of the Data Processing Executive Office and most of the clerical operations placed on the fourth floor. Floor A3 was designed for the heavy computer equipment along with the management and supporting clerical units directly involved with the computer operations. The second floor, the one that was also built to support heavy computer equipment, was not initially needed for that purpose because of a change in the Real Time plans and therefore was left uncompleted for a few years.

On August 20, 1973, corporate top management established a new data processing management team of four data processing executives headed by Dr. Norman Vincent, Vice President-Data Processing. Although the makeup of the DPEO, as it was generally identified, changed somewhat over the eight years of Computer Era V, the initial members were:

Norman Vincent	Vice President-Data Processing
Elmer Bullard	Asst. Vice President-D.P.Administration
Arthur Dierkes	Asst. Vice President-H.O.D.P.
Myron Willke	Asst. Vice President-Data Processing

The four of us occupied offices along the east wall of floor A4. Vincent occupied the northeast corner office, with Bullard, Willke, and Dierkes occupying the adjoining offices in that order. Secretaries were situated in a rather large area immediately west of the immediate offices to which they were assigned.

This was also the date when I transferred back into the Data Processing Department after spending two years as an Assistant to Roger Joslin, then Vice President and Comptroller, and currently Senior Vice President and Treasurer. I found Joslin a very fair and perceptive administrator and I learned very much about other areas of the responsibilities of the Executive Department to which I was assigned during those two years. They were very enjoyable years.

Data processing by this time was really in the "big leagues". That was one reason DPEO was formed making it possible to utilize the special abilities and expertise of the four of us as a management team of what had become the largest department in State Farm Mutual. Much credit must be given to Joslin and Vincent in the perception of that need and therefore the formation of DPEO. Much credit must be given especially to Vincent for making that concept work quite well.

During most of that era, DPEO membership remained generally unchanged with the four original members except for the following few changes toward the end of the era:

1. Norm Vincent moved for a short period of time to the 11th Floor, in the Executive Tower, on January 15, 1976 as an Assistant to Roger Joslin. Vincent retained control of the Data Processing Department. Elmer Bullard, Assistant V. P.-Data Processing Administration, temporarily moved into Vincent's office and assumed chairmanship of the D. P. Staff until Vincent returned to A4 on November 28, 1978.[26] Shortly thereafter, December 8, 1978, Bullard moved to the

Fire Building for a few months after which he moved back to an office on floor A4. Vincent maintained full control of the Data Processing Executive Office and resumed control of the Data Processing Staff.

2. Arthur Dierkes, deceased, one of the original members of DPEO retired on February 28, 1978. The department held a luncheon retirement meeting for Dierkes at the Lakeside Country Club on February 22, 1978 which was highlighted by the attendance of one of Dierkes' boyhood friends, President Edward B. Rust, Sr., also deceased.

3. Edward Shelley, Vice President-Data Processing (Fire Company) was named as a member of DPEO on July 1, 1978 as a result of the department management restructuring motivated by additional consolidation of Fire Company data processing activities into the Auto Company data processing functions. With the earlier retirement of Dierkes and the addition of Shelley, the DPEO members were Vincent, Bullard, Shelley, and Willke until my retirement.[120] On January 1, 1981, Mert Walker, Assistant Vice President-Data Processing (Fire Company) joined DPEO reflecting another consolidation of Fire Company data processing functions into the Auto Company operations. Thereafter, DPEO was composed of Vincent, Bullard, Shelley, and Walker. (More will be said later in this chapter about the management restructures which were effective during Era V.

Major Activities and Decisions of DPEO During Era V

Naturally many of the major and lesser decisions were made by Vincent as the head of the department without DPEO involvement, as was also true to a lesser degree by the other members of DPEO. However, as stated earlier, Vincent made a special effort to meet with DPEO on the most important decisions facing the department and in so doing made the DPEO concept work well. Obviously, the absolutely important decisions reached by Vincent with or without DPEO involvement were discussed with Joslin and other corporate management personnel as properly required.

Era V was one involving many major projects with an ever increasing cost potential for a company which was growing very fast and in the process requiring a corresponding growth in data processing manpower. All of this required many decisions at the DPEO level which often resulted in a serious impact on the data processing divisions, sections, units, and individuals required to convert those decisions into departmental projects. It is important therefore to identify the most important of those decisions and resulting activities in order to fully understand that era. Therefore, I shall merely *introduce* the most important decisions at this time with a more complete explanation of the details later in this chapter. The most important were:

1. The most significant decision reached by DPEO, with approval of corporate executives, was the decision on January 3, 1973 to decentralize the Real Time System into 25 regional systems—one self-sufficient system per office. The significance of that decision was that the first Real Time system, already operational including a network connecting the North Central, Missouri/Kansas, and Illinois offices, was to be disbanded and replaced with a single computer in each office sufficiently powerful to process the work of that office efficiently. No more regional networks involving more than one regional office for insurance processing were to be implemented.

   With the decision to ultimately abandon the Real Time Network concept, a new name "System Delta" was chosen for the decentralized region-based system which would ultimately replace the Real Time System. The basic concepts of the Real Time System, subject to necessary alterations, were to be included in the Delta System.[124] The name "Delta" was chosen since this was the "fourth generation of data processing systems for State Farm Mutual" as explained by Vincent in a memo dated January 19, 1973 to key management personnel of the State Farm organization.

   The name "Centralized Delta" was then given to the three offices still operating temporarily under the Real Time Network concept. Surprisingly, the disbanding process was a very significant task. Two years after the initial decision to decentralize, DPEO established a committee for the decentralization of Delta on July 21, 1975. It required nearly a year before the work of that committee had been completed. The plan titled "CDS:Decentralization of Delta" was approved by DPEO on June 3, 1976.

   In order to formulate that plan as a truly workable substitute for the Real Time Network already operational, it was necessary to make some very important interim decisions regarding the computers most appropriate for that task and also as to the logistics required. The first such decision was to install the first System 370/158 on an emulated basis and test it within the Data Center. (Emulation in this context simply meant the 370 was equipped to operate the outmoded 1400 System programs until reprogrammed.) On January 19, 1974, the 370/158 was ready for a demonstration held especially for DPEO. That test was so successful that the decision was reached to plan the decentralization process around that computer.

   However, that did not prove to be an easy decision because operation under a single system concept was entirely different from the network concept already in use. Added to that was the constant bombardment of other computer manufacturers desiring to supplant IBM computers for that purpose. One of the most persistent was Amdahl Corporation, headed by a former top IBM engineer by the name of Amdahl. That persistence lasted until February 27, 1978 when DPEO agreed to a serious consideration of the Amdahl computer. By March 24, 1978, we had completed our investigation and informed Amdahl that it was not to State Farm's advantage to make such a drastic change that late in the execution of our Delta plans.

2. Perhaps the second most important decision regarding a major project pertained to the Agents' Hand-Held Calculator project introduced by Norm Vincent. This project was initiated as a result of a discussion with Vincent when he assigned to me the task of investigating the feasibility of computing agents' automobile rates on a hand-held calculator. In my diary, the first reference to that assignment was on November 18, 1975. The importance of that decision by Vincent was that it led directly into the most important data processing project ever devised for the agents' information and transaction processing—the ECHO project of which a whole section will be devoted later in this chapter.

3. Norm Vincent, Al Creasy, Roger Woodrey, Elmer Bullard, and Myron Willke visited McDonald Douglas, St. Louis, at their invitation on May 10, 1973 to observe its system operations, system concepts, and most importantly its leasing policies with a view toward the possible leasing of a portion of its computing power and expertise. After consideration by the five of us, we did not pursue that concept further at that time.

   DPEO was still interested in the potential of leasing computer power when on October 9, 1973, Norm Vincent, Robert Deems, Peter Browne, and Myron Willke visited the Monsanto Corporation, St. Louis, for the same purposes as explained earlier for McDonald Douglas. The four of us reached the same decision at that time although at a later date we did contract for some quite important jobs with one or possibly both of those companies.

4. One of the "hot" issues in 1974 was the question of establishing a "Universal Teleprocessing Network" for all State Farm Companies. This was especially timely as there was a serious danger of multiple systems, each serving the major State Farm Companies separately with their counterpart organizations within the regional offices. DPEO presented a plan to the Electronics Committee, which represented all companies, and which on July 10, 1974 thoroughly reviewed the plan and approved it for corporate management review and approval. Corporate management approval to finalize and implement the Universal Teleprocessing Network was received on September 25, 1974.

5. Computer Era V may be remembered as a time when minicomputers really became popular throughout the USA. Digital Equipment Corporation (DEC) has been credited as being the prime mover of this type of computer along with Data General and Hewlett Packard. Those companies had been in operation for a decade or more but it was in the 1970's when they became a significant marketing force of minicomputers.

   State Farm Mutual really did not get interested until about 1974. This was as much the result of the concept of centralizing the computerization within the established data processing departments as it was a lack of interest in this concept within the user departments. One of the first departments to show a strong interest in a stand-alone minicomputer for its department was the Actuary Department. After considerable research and discussion of the advantages and disadvantages of such a move, it was a corporate management decision on December 30, 1974 not to pursue this possibility further. As new companies entered the minicomputer field, the pressure grew and finally State Farm did experiment with the minicomputer concept. A complete section will be devoted to the establishment of the first minicomputer at State Farm later in this chapter.

6. Although many other important projects and activities will be discussed in the remaining sections of this chapter, one of the last important DPEO considerations of that era was about the Interactive Delta being connected to a series of portable minicomputers when those corporate departments already were being served by terminals connected to the mainframe computers. That subject was first presented on December 12, 1978. Even though no decision was reached, it was agreed that it was a subject of immense importance which became a major corporate project after my retirement. (Minicomputers in *this context* also equate to Personal Computers, for which the market "exploded" in the 1980's.)

Delta System Development and Implementation

The DPEO decision to convert the Real Time System into a decentralized system with self-sufficient systems in each regional office was as a result of a study, dated January 2, 1973, by a Task Force consisting of Vere Cottrell, John Fay, Walt Ohler, and Mike Sallee. That study named the "Task Force Report on Real Time" validated that the company had grown so fast that it would require nine rather than three IBM 360/165 systems, as originally estimated, to handle the Regional Data Center work load under the Real Time network concept. That study recommended that either a 370/155 or 370/158 be placed in each office and the Real Time Network concept be abandoned. As stated earlier, the 370/158 was chosen.

The first 370/158, OS/MVT System was installed in November 1973 in the Regional Data Center (RDC) which by now had been set up as a separate entity from the Home Office Data Center (HODC).[122] This computer served as the development system for adapting the Real Time software concepts to the decentralized regional offices. Because of the complexity, that decentralization applied only to the twenty two offices NOT converted to the Real Time network at that time, i.e. the Illinois, Missouri-Kansas, and North Central offices. Decentralization of those twenty two offices was implemented in two phases:

Phase 1. The 370/158 was installed using the 1400 System software in the Emulated Mode. The existing 360 System computers were released. The 370/158 could do the work of the 360/40 and 360/30 systems in each of those 22 offices. Those offices had one or two of each of the 360/40's and 360/30's depending on the size of the office.

Phase 2. Several months later, the 1400 System software was overlapped with the Real Time software which had been revised as needed to operate in a decentralized mode. Shortly, thereafter the 1400 System software was withdrawn and the conversion for that office was complete. It was then operating as the Delta System.

The first regional office converted in that manner was the Indiana Office which received its 370/158 in May, 1974 and converted to Phase 1 on June 1, 1974. Within a few months, Phase 2 was implemented making the conversion complete. By May 1, 1976 all of the remaining 22 offices had installed the 370/158 except Canada. The Canadian Office installed a 370/148 System on January 30, 1978, converted partially to the Delta concept during 1978 and 1979 but did not convert the final Auto Divisional Runs until 1980.[125]

Indiana implemented the Delta programs in segments by installing programs for different departments within the regional office at intervals of a month or so. All of the 22 offices segmented their installations via a schedule that would suit their office best—an example of the "managed change" concept.

The 370/158 used the OS/MVT operating system until July 1975 when it was replaced with a virtual operating system, VS1. Beginning in September, 1975, regional offices installing the new 370/158 were being installed immediately with the virtual operating system, VS1, thereby bypassing the OS/MVT system entirely. The new 370/158 Delta Systems were so powerful that they could replace all 360 Systems in all of the 22 offices.

The following is an implementation schedule of the 370/158 installations, which were implemented as two separate groups in an overlapping process:

GROUP I

Indiana	6-1-74	Southeastern	10-1-74
Mid-South	3-1-75	Eastern	5-1-75
Pennsylvania	7-1-75	Michigan	9-1-75
Northeastern	11-1-75	*Ohio/Canada	1-1-76
Seaboard	3-1-76	Alabama	5-1-76

GROUP II

Westlake	11-1-74	So. Calif.	1-20-75
No. Calif.	6-1-75	Florida	8-1-75
So. Central	10-1-75	Northwest	12-1-75
Mt. States	2-1-76	West Central	4-1-76
Southwestern	6-1-76	Texas	9-1-76
Sunland	10-1-76		

(*) Canada incorporated the Auto Co. Divisional Runs in 1980.

As the twenty two offices were being decentralized, work was being done concurrently to decentralize the three offices on the original Real Time network which had been named "Centralized Delta". One of the first steps taken toward decentralization of this network of offices was to name a "CDS Decentralization Committee". The members of that committee were:[123]

Al Creasy	Dick Marley	Eldon Rupp
Ron Hill	Jerry McAhren	Roger Woodrey
Larry Lankford	Dave Munro	Myron Willke, Chairman

Many others within the Corporate Headquarters and the three regional offices affected assisted our committee with such items as staffing requirements, levels of expertise needed, and training lead time required to meet the schedule we had proposed in our report dated May 20, 1976.

The schedule proposed in that report titled the "CDS Decentralization Study" included these steps:

Illinois Office:

To remain on Centralized Delta for an indefinite period because after the other two offices had been decentralized it would require some time to determine how much total computing would be needed when only Illinois processing remained and the Regional Data Center (RDC) had been disbanded.[122] However, Illinois did install a *370/168* in October 1978 and implemented Delta in December 1978.

Missouri/Kansas:

The decentralization process required the release of a Fire Company 370/158, configured for the Fire Co. needs and the installation of a 370/158 configured for both Auto Co. and Fire Co. requirements on a decentralized basis. The Delta 370/158 was installed in March 1977 and the Delta System was completely implemented in June 1977.

North Central:

The decentralization process was nearly identical to that performed within the Missouri/Kansas Office. The Delta 370/158 was installed in December 1977 and the Delta System completely implemented in March 1978.

Regional Data Center:

As long as Centralized Delta was in existence there were two Data Centers in the Corporate Headquarters, the Regional Data Center (RDC), located on floor A3, with the central computer to power the Central Delta Network; whereas the Home Office Data Center (HODC), located on Floor B2, had its own set of computers for processing work for the Home Office Departments located within the Corporate Headquarters. Once the Regional Data Center was no longer needed because of the abandonment of Centralized Delta, the RDC and HODC computer centers were combined on floor A3.

As stated earlier, the Canadian Office did not complete its Delta conversion until December 1980 confirming the fact that the managed segments concept adopted during that era did prolong the conversion process but was absolutely necessary and worked well.

A discussion of the Delta design concepts in detail would be redundant since essentially they are the same as the Real Time System concepts explained in some detail in earlier chapters. In general the concept was to process the mass of daily transactions involving insurance applications and claims on a batch basis as would statistical and management reports. All other transactions would generally be processed on an "on-line" basis with eventually all information instantly retrievable through on-line terminals. Most of that is operational today but greatly expanded—especially with the enormous changes made possible through the ECHO System devised to benefit primarily the State Farm agents.

Finally, the ultimate impact of Delta is that it opened the door to the immense improvements devised in the "Age of Distributive Processing" after my retirement in 1980. The next chapter will explain that era briefly.

Data Processing Operating Environment Under Delta

In order to explain the operating environment during the mid-1970's under Delta, it may be well to discuss briefly the historical development of those operations for the 650 and 1400 Systems which will help us focus on the operational changes that were considered in the Delta era. This discussion of the operational environment will pertain primarily to the consideration of a change from a five to a six day work week and how that would affect the user departments as well as the Data Processing Department.

When the 650 Systems were installed during Era I, the insurance operations were basically on a eight-hour, five-day work week with occasional overtime as required. The computers were in a bundled environment and could be used beyond the eight hours without additional usage charges by IBM unless the total hours exceeded 176 hours per month. In that event, IBM charged 20 percent of the base hourly rate for the excess hours of use on the rented equipment.

Since the work load during Era II became very heavy, the Home Office Data Center and many regional office centers worked a 3-shift, five-day work week which became the norm. Since 176 hours represented approximately an eight hour, 1-shift basis, it meant that the extra two shifts were being operated at a 20 percent computer leased cost.

During Computer Era III, 1966 to 1968, as explained earlier, IBM unbundled and changed the extra shift usage charge to 10 percent of the base hourly rate making the 3-shift, five-day concept even more attractive.

During Era V, with computers everywhere operating on a 3-shift, five-day work week, a study was made to determine if conversion to a 3-shift, six-day week would be to the advantage of State Farm. However, by that time most of the computers, the 370 Systems and peripherals had been purchased or placed on a fixed term plan. When added to the fact that computer operating personnel would have been paid for six days, not five, while nothing would have been saved in computer costs; and, that it would be an almost useless operation without the insurance operating divisions supplying input on the sixth day, the plan was abandoned. The operational environment throughout Era V remained on the 3-shift, five-day work week.

Advances In Computer Technology During Era V

As in all of the past eras, IBM was still the undisputed leader of computer technology research and development. However, others were making great strides to close the "gap" and before the end of the era, they had made considerable progress.

That era could be called the era of the IBM System 370 which was the basic computer line for our own Delta System. The primary technological impact of the 370 Systems on State Farm and no doubt on many other large firms was:

1. The computing power was expanded and extended considerably to the users and programmers through such packages as ITF, ATS, and TSO, explained earlier, which markedly enhanced user productivity, both via terminals and other computer devices.

2. It provided a new form of user communication and interface with the computer by way of the Data Analyzer both in the Corporate Headquarters and regional offices.

3. It further enhanced the use of mass storage devices and data bases beyond that already available with the 360/Systems.

4. Finally, it made the Delta System viable because of its enhanced ability to transmit volume data in-house as well as over long-distance teleprocessing circuits.

During this period, IBM with it many versions of the System 370 dominated the industry so that it could logically have been called the fourth generation computer. But, according to author Sobel, "the 370's truly weren't a fourth generation; rather, they were an improvement upon the third, as were rival and imitation machines, known as clones, soon released by other companies." Even Thomas Watson spoke of the 370's as the "new generation" not the fourth generation.

Nevertheless, IBM did announce many versions of the 370 System and therefore the computer technology of the 1970's was 370 dominated—the result of which convinced computer manufacturers not to expend the amount of capital which would have been required for a true fourth generation computer.[2]

In addition to the few new systems brought out by IBM in that era, to be identified later, the most important computer technology changes which began to appear in the late 1970's were being introduced by IBM competitors. IBM had about 70% of the market but produced about 40% of the product ouput. Others were moving ahead in the areas of software services, minicomputers and personal computers.

IBM, however, has always had such resilience that it has often made advances in some fields while barely holding its own in others. Nevertheless, during the 1970's, it was setting the computer standards, therefore, we shall identify the more important IBM announcements of that era, in order to give the reader the thrust of computer technology of that period.

The most important advances of IBM computer technology announced during the 1970's were:[37]

1. System 370 Models 115, 125, 135, 158, and 168 in 1973.

2. A larger Model 145 processor.

3. A 3740 Data Entry System and 3790 Communications System.
4. A 3850 Mass Storage System in 1974.
5. IBM developed Bubble Lattice Storage and increased the capacity of bubble memory.
6. Introduced the very fast 3800 printing sub-system in 1975.
7. Announced in 1976 the System 370/Models 138 and 148 as enhanced Models 135 and 145, respectively, along with the introduction of the graphics display monitor.
8. In 1977, IBM introduced the powerful System 370/Model 3033 processor.
9. On the lower end of the line, announced System 34 which was essentially a minicomputer. (We examined that system as a possibility for the Investment Accounting Minicomputer but rejected it in favor of a Honeywell System.)
10. In 1978, IBM introduced the 8100 information system which competed mainly as a minicomputer rival.
11. In 1979, IBM announced the 4300 processor which featured multilayer ceramic packaging, and 64k bit memory chips which permitted the most dense packaging of memory and logic circuits available in intermediate sized systems within that era. State Farm installed only one 4331 and many more 4341 systems from that computer line for work in the operating divisions of our regional offices shortly after my retirement.
12. The last major IBM computer announcement during Era V was the announcement of the System 370/3081 in 1980 as the "top of the line" with twice the internal performance of the 3033 introduced in 1977.

For me to explain in detail the differences between each of those computer announcements and enhancements would be so detailed that it would become wearisome for most of you. Suffice it to say that the increased power between the first and last models enumerated above ranges between 100% and 300% more powerful. Some of that power emanated from new operating systems as well as other internal innovations.

That array of announcements maintained IBM's market share in the field of large computers but permitted some slippage in the other fields noted above. It must be emphasized that IBM, in order to make such an array of computer advancements possible, still far out-spent its competition on the pure research required to sustain the computer technology lead it had maintained during the era. The result of such technology and that of its competitors has enabled the computing industry to increase the proliferation of computers in the business, economic, and social fabric of our individual lives.

State Farm utilized a number of the IBM systems enumerated above. As explained for Delta, we used the 370 System models 148 in Canada, the 165 in the Regional Data Center and the 158 in all regional offices. The Illinois Office implemented a 370/168 later for Delta.

Late in the decade of the 1970's, the 370/Model 3033 replaced the Model 168 which was shipped to the Eastern Office to replace the 158 in that office. In addition, the two Type 3800 high-speed printers were installed in HODC.

Finally, the 4300 Line of computers were installed in the regional offices with the first one placed in the Illinois office working as an off-line computer to the Model 168 and later the Model 3033 in that office. The 4300 Line, i.e., the 4341 was used as the input/output computer for the operating divisions. The first operational 4341 (in Illinois) was placed on line on November 3, 1980 when David Smith, Illinois Regional Data Processing Manager, (now deceased), sent a telegram of jubilation, "The first 4341 is alive and well in the Illinois Office. 37 terminals with two seconds response time !!!!" That was pertinent because the policy information for internal and external claim service was maintained on disk drives attached to the new 4341. That happy note fairly well puts an exclamation mark on the IBM computer technology of that era and particularly that portion of it used by State Farm Mutual.

IBM Team Serving State Farm During Era V

By that period of 1973 to 1980, the IBM Bloomington Office had also grown extensively. The vast majority were serving the State Farm Companies in the capacities of Marketing Representatives, Field Engineers, and System Engineers. The total number when including secretaries was entirely too numerous to identify but I shall name the top management, marketing representatives, and engineers with whom we dealt during that era.

During the entire eight-year period, the State Farm Account Manager and head of the Bloomington Office was Al Johnson. Johnson remains head of the Bloomington Office but his title was changed to Bloomington Branch Manager in 1990 and recently again changed to Business Unit Manager.

Johnson's assistant and Senior Marketing Manager was Weyland Ginther, currently retired, having retired in the 1980's. Other major marketing representatives serving the State Farm Companies were John Yerkes, Advisory Marketing Representative; Carmen Trenton, Marketing Representative; and, William (Bill) Swanson, also a Marketing Representative.

Sometime during the 1970's, IBM introduced the position of Field Engineer. Those individuals in that position served as the top "technical" advisors and who performed other top level services for State Farm. The Field Engineering Manager at that time was Charles Pierman who had a number of field engineers under his supervision.[126]

System Engineers were another group of IBM personnel that were especially helpful to State Farm programmers and operations personnel. With the type of computers being built and State Farm personnel being much more educated in all phases of the computing environment, the day of the personal "hands on" help from IBM Systems Engineers was nearly over. However, Systems Engineers continued to be very helpful as consultants for State Farm data processing personnel. Among the Systems Engineers of that era were David Zerfas, Bruce Sieben, Lowell DeFrance, Mike Boyer, Judy Killian, Bert Brat, and Gary Kehl—most of whom remain currently in that capacity.

State Farm Mutual was indebted as it has always been to that varied and significant assistance IBM personnel provided State Farm during that and previous eras of major computer hardware and software announcements.

Antitrust Court Cases Affecting Data Processing

As described in Chapter V, the case of Control Data Corporation versus IBM was only the beginning of an onslaught of antitrust suits brought against IBM by competitors—some relatively small—culminating in the "big one", the government of the United States.

The principal suits brought by competitors besides CDC, were not from their principal computer competitors but from such organizations as leasing companies and producers of peripheral equipment.[2] Author Sobel states that about one or two had reasonable complaints whereas most of them were frivolous with requests for monetary damages exceeding their corporate net worth values.

Some of the lesser cases were brought by Data Processing Financial & General; Applied Data Research and Programmatics; Levin-Townsend; Greyhound Computer Leasing; Memorex; and, Telex. Most of them were settled out of court or even dismissed. Those named were merely some of the cases of which perhaps Telex gave IBM the most trouble except for the very comprehensive government suit.[2]

IBM settled most of the cases in a way that suited them except for the Telex case where they suffered their first defeat. IBM countered with lawsuits against Telex which culminated in early 1975 by a reversal by the Tenth Circuit Court of Appeals. Both the original as well as the reversal decisions stunned the industry. The ultimate result was an out-of-court settlement in October, 1975. It was beneficial to both parties: "Telex was off the hook" and it enabled IBM to enter the "fray (the government suit) in good spirits" according to Sobel.

The government opened its case against IBM a week after the court of appeals had reversed the Telex decision. The presiding Judge David

Edelstein knew IBM well having adjudicated the 1956 consent decree and therefore quite knowledgeable of IBM's history. It appears that Judge Edelstein believed this would be a very long and extended case and was prepared to see it through to the very end. While in the midst of the government suit, IBM settled the case with Greyhound Computer Leasing by paying them $17.7 million and in return Greyhound dropped its suit. That was the last of twenty-four private antitrust actions which IBM either settled out of court or won through court action. That removed a tremendous load "off the shoulders" of IBM which still had to confront the government case.

The U.S. v IBM antitrust case began a decade earlier with a preliminary inquiry in 1964 when Nicholas B. Katzenbach was Deputy Attorney General. In 1968, IBM was informed of a complaint recommended to Attorney General Ramsey Clark. In 1969, the Department of Justice filed the case against IBM. In early 1972, the new head of the Antitrust Division, Richard McLaren requested that the Council of Economic Advisors review the IBM case and to determine if going ahead with the litigation was in the public interest. With a favorable reply, preparations for a trial were accelerated which culminated in the commencement of the trial in May, 1975.

In all, the case was prosecuted under the supervision of nine Assistant Attorney Generals under both Republican and Democratic Administrations. The last, William F. Baxter, ordered the case to be dismissed on January 8, 1982.[128] Ordinarily, the Assistant Attorney General would simply recommend dismissal to the Deputy Attorney General who would forward the recommendation to the Attorney General. In this case both the Deputy Attorney General and Attorney General had withdrawn from participation in the case leaving Assistant Attorney General William Baxter with the final authority and therefore was the final decision maker. Further reviews and appeals could have been made but after nearly two decades of litigation, it is my opinion that everyone was happy to put an end to all that litigation.

IBM had amassed 46,726 tons of documents and staggering legal costs—ending was perhaps one of the most significant antitrust actions of all time. Case dismissed![12] IBM, now working under a less hostile Reagan Administration was free again to compete aggressively in the data processing industry.

Privacy Issues Affecting Data Processing

The second most important legal action of vital interest to data processing in the 1970's was a flurry of privacy legislation, very little of which became law, which descended upon the industry during the early years of that era. Many trips and hours were spent concerning privacy issues by many individuals representing the departments most closely affected by any possible national or state legislation. The primary concerns were about legislation that would unnecessarily restrict the flow of information within our departments and especially within our computer systems.

Norm Vincent asked me to investigate this concern as it related to data processing activities. Almost immediately individuals were chosen to assist in the overall examination of this privacy issue. One of the first to come to my assistance was Edward B. Rust, Jr, (currently president), then a member of the Legal Department. Many other State Farm employees representing major departments began spending countless hours on privacy issues during that period.

Shortly thereafter a companywide Privacy Committee was established for the purpose of arriving at a companywide, cohesive plan dealing with any possible adverse affects which any privacy legislation may have had on the company's primary interests.

The members of that committee were:

Don Wamboldt—Fire Company	Jack States—Life Company
John Bernstein—Legal	Prentice Blair—Health
Paul Ulrich—Underwriting	Myron Willke—Chairman

During the tenure of that committee, which convened regularly for two or more years, the U. S. Congress passed the Privacy Act of 1974 and legislation which gained some impetus from that act named the Freedom of Information Act. Strangely, the essential purposes of the two acts were diametrically opposed. The privacy act worked toward restricting information while the "freedom" act worked toward releasing those restrictions on governmental information previously adopted and to protect against such restrictions in the future.

Quite frankly, despite all the attention given to the privacy issues, the end result affected primarily governmental information issues and only minimally privacy issues affecting private industry directly.

As a result of the effort by our committee, we established some guidelines for the company which were rather general in scope because the fears which originally imagined private industry being at risk never reached fruition. The committee concluded that the legislation which did become law during the 1970's had a very minimal effect on the data processing and other operations of State Farm.

John Bernstein, a committee member, informed me that during recent years the National Association of Insurance Commissioners (NAIC) established a task force which developed the Insurance Information Privacy Protection Model Act which has subsequently been passed as state legislation in about thirteen states—Illinois being the first. It appears that is about the only significant privacy legislation to become law since those "frenzied" days of the 1970's.

General Technologies Implemented at State Farm

Computer Era V was titled as the era of the Delta System and Integrated Processing because Delta was the primary technology but not the only important technology introduced. It was a period when many other technologies were coming to the attention of our technical support groups—most of which could integrate easily with the Delta System and a few that augmented but did not necessarily integrate as well but did enhance all ongoing systems. Most importantly, integrated processing refers to the integration of corporate, regional, and agents' processing through the teleprocessing and ECHO technologies to a degree never before achieved.

Some of those major technologies introduced and implemented at State Farm Mutual included the Electronic Document Handling System (EDHS); the Agents' Echo System; the Investment Accounting Honeywell Minicomputer; and, the Information Management System (IMS). In addition many lesser technologies were installed during that era which I shall merely list with a brief explanation. (The IBM 1288 Optical Character Reader was a major player in Era V but had been initially introduced and installed in Era IV.)

Electronic Document Handling System

This was one of several projects over the years that seemed to work well in research tests and also showed great promise for our type of operation. Thus, it was a project that ran a long time and seemed to have a life of its own. Unfortunately, it failed the test of being cost justified and was ultimately abandoned—having been in a test mode from 1972 through 1977.

The Electronic Document Handling System, known as EDHS, was an IBM research project aimed at the use of image technology to create a paperless work flow for State Farm service and underwriting operations.

David Vitek, Data Processing Department, who along with Duane Weber, Service & Systems Department, co-managed that project, explained the project in this manner:

> "The concept was that paper documents would be scanned in the mailroom. The scanned image would be provided on a workstation at each desk. A second workstation would display the "coded" information taken from the policy master record and other existing computer files. It was hoped that, in time, technology would permit a single workstation with a split screen. The image portion would be displayed on one side and the coded information on the other side of the split screen. At the time of the research, it was still necessary to use two workstations on each desk.

"The primary members of the IBM team were Ken Peet, the project manager; Peter Varney, from Hursley, England; along with Al Moore, Lowell DeFrance, and Ben Housman. The equipment was being developed in IBM's Hursley, England facility. Some programming support was provided by an IBM facility in Los Gatos, California."

Vitek, now a Assistant Vice President—Data Processing, indicated that some, not all, of the key individuals from State Farm were:

Service & Systems Department:	Data Processing Department:
Paul Shaw	Dick Wadley
Tom Black	Roger Hollis
Janie Houchin	Linda Storbakken
Steve Junghans	Dick Miller
Ruth Matheny	Roy Patterson

Vitek also explained that his documentation reflected only the names listed above and was "not complete enough to give all names involved." (I hope those omitted, if any, will understand and empathize with Vitek's dilemma.)

Vitek continued his explanation with:

"A working model . . . was created and run in the Illinois Regional Office. It ran during 1976. No actual work was processed through the State Farm insurance systems. Rather, the prototype duplicated the handling of input using the electronic document method. Input was created and compared to the actual input from the regular business systems. This prototype demonstrated the concept was workable.

"The research was ended without implementation because the image portion of the system was not cost justified . . . It was not cost justified then, and still is not today, to maintain a policy file in an image format when the probability of needing the documents it contains is less than 1 percent."

The research of EDHS was abandoned and we find that much of the information used for EDHS is captured today in coded form, not image form, on the ECHO computer in each agent's office.

From the "best" information available, apparently IBM continued its research effort on the scanner used for the EDHS project but withdrew the EDHS system entirely from the market permanently after State Farm abandoned the project.[96] Other smaller companies have entered the arena of scanning documents with that scanner or its replacement but with an entirely different purpose and approach.

Research and Operation of the Agents' ECHO Systems

The history of the agents' ECHO Systems, from the very first idea of supporting the agent with a small hand-held computer through the myriad of steps which ultimately led to the complicated ECHO Systems of today, is one of the most interesting and intriguing stories in the development of computer technology within State Farm.

Whereas the initial concept was simply an idea to make the calculation of auto insurance rates an easy and quick process via a hand-held calculator, it has become a very complex operation involving thousands of ECHO computers in use in nearly every agent's office throughout the country.

Let us step back to the beginning when the important research decisions were made. As stated earlier, the first ideas about providing the agent with the potential for immediate information about the agent's policies in force was an early consideration of the CRT terminals connected to the Real Time computer in each regional zone office. That idea never received serious support and was dropped. At that early stage, the late 1960's, it was considered too costly.

The next project was a study requested by Vincent to study the agency systems of other insurance companies. That was an extensive study of thirty of the largest companies in the United States. The objective was to provide information on what direction the industry was going regarding information that was being supplied to their agencies and what type of equipment was being used. The result was as a general description—not much! Many claimed to have plans for CRT terminals connected to their main computers etc., but no one had an ECHO type system in use or even seriously on the drawing board. In turn, most of them were eager to learn what our intentions were—obviously ECHO also was not yet in our plans.

The next phase of our research was the hand-held calculator project initiated by Vincent in 1975. For the record, Dr. Norman Vincent conceived and was the driving force behind that concept which led to the ECHO Systems of today.

Vincent and I worked very closely on the hand-held calculator project, testing the small calculators of several companies and eventually settling on the Texas Instruments calculator as being the most promising. Norm and I spent more than one year on this research including trips to the Texas Instruments Corporate Headquarters.

This was followed by a pilot project involving jointly the Agency and Data Processing Departments. The very first test project involved a group of Texas and Oklahoma agents under the supervision of our Southwestern Office in Dallas.[26] The test proved to be inconclusive. The next project involved a number of Colorado Agents who in the 1977 experiment found the Texas Instruments model too limited for their purposes. Earlier the Agency Department had also demonstrated those calculators at the 1977 Agent's Convention in Atlanta, Georgia.[129]

Vincent had written several memos to Roger Joslin, Roland Marston, and Don D Rood, currently Senior Agency Vice President, suggesting various changes. The result of those memos was to abandon the small calculator concept and instead form a second research group to test the viability of providing computer terminals for State Farm agents. That study also determined that "dumb" terminals connected to the central computers were also inadequate and that more research should be done in the area of minicomputers.[129] This led to the ECHO concept. Let me quote from a memo by Barb Wanthal, Agency Systems, to Roger Woodrey:

> "In 1978 the Agents Minicomputer Research project was initiated to continue the study of minicomputers for State Farm agents. This project consisted of the following three phases:
>
> Phase I:
> In the 3rd and 4th quarters of 1978, the project group visited and interviewed 31 agents. The purpose was to identify the possible applications for an agent's minicomputer that would be of benefit to the agent's office operation.
>
> Phase II:
> Beginning in early 1979, Phase II saw the development of four of the seven identified applications into prototype programs on the IBM 5110 test system. These applications included Auto, Fire and Life proposals and a prospecting function. This system was put into the offices of six Illinois agents for an evaluation period of approximately two months. This evaluation also included program and rate issuances sent from Corporate on diskettes to update the 5110's. The primary objective for this evaluation was to determine if the proper level of ease of use could be attained. This evaluation provided the project group with enough feedback to satisfy them that the prototype applications could function effectively in agents' offices.
>
> To conclude the Phase II validation, a portion of the initial group of agents were invited to Corporate to check for the accuracy of the direction of the project. The conference consisted of time for hands on demonstrations of the system and for gathering feedback on the system.
>
> Phase III:
> Phase III saw the expansion of this group to the project team which began work, on the regional hardware and

software requirements necessary for the support of the agent's computer system, in March 1979. The initial project team consisted of 13 analysts and one manager.

"In mid-1979 several major decisions were finalized. The most important being the selection of the vendor to supply State Farm with the small customized business computers we required. From a field of nine vendors, which was narrowed down to IBM and Honeywell, IBM was selected as the vendor. The minicomputers would be customized for State Farm based on Series/1 architecture. The operating system and multiple terminal manager would also be customized especially for State Farm.

"Other important steps included the selection of PL/1 as the programming language for the agent's computer system and the development of the Computer Assisted Instruction (CAI) application to aid in the training of agents and their staffs.

"After much thought, "ECHO" as chosen as the name for the computer system. The name "ECHO" is based in Greek mythology. "AESOP-Agents Electronic System for Office Procedures" was also considered, but was rejected due to the immediate link to fables. ECHO was officially announced to State farm agents in an December, 1979 "Reflector" article. The article said that the computer was to be developed and piloted in October of 1980.

"The Agent Systems Division was officially formed in late 1979. This division was responsible for the development and support of the ECHO Computer system.

"In early 1980 the contract for the purchase and maintenance of the system was developed. The computer systems would be purchased by State Farm from IBM and State Farm would contract the maintenance of the systems with IBM. The agents would lease the computers from State Farm on a voluntary basis. These lease fees would pay to the system over a period of approximately seven years."

That is how ECHO came into existence. Since I retired in 1980, I had no further contact with the project in any manner. Barb Wanthal does continue to say that the ECHO system continued to expand as early as 1981 into the other regions in an orderly fashion. In addition, over the next decade it expanded its capabilities immensely through a series of upgrades via ECHO'S II and III.

The May 1991 Reflector announced the next version ECHO IV for implementation in 1992. That expansion involved many improvements that made work processing by the agent an ever increasingly valuable tool and a substantial investment by the State Farm Insurance Companies.

An explanation of the work performed by the ECHO systems would be entirely too comprehensive for the purposes of this book. However, suffice it to say that ECHO enables the agent and his/her staff to be much more efficient and much of the work that emanates from the business that the agents and their staffs produce can be transmitted directly to the operating divisions of the regional offices to which they report.

A fascinating project indeed and also a very significant continuation of the pioneering State Farm has done in the field of computerization from the very beginning in 1955!

Interactive Claims handling System

Although State Farm was a pioneer in the handling of claims via computer processing beginning with the 1400 System in 1962, it did not begin work on an interactive claims system until 1978. In 1978, a team of four programmers began researching the needs for an interactive claim handling system.

As was true of much of the research done in the late 1970's, this project was getting a good start when I retired. I shall, therefore, quote from a memo written by John Bittermann about the latter stages of that project:

> "In 1979 Hewlett Packard was chosen as the vendor and a prototype was developed. This was the first attempt by State Farm at developing a distributive system concept for claims. This effort was limited to developing an Indexing system for Auto.
>
> "By the end of 1980, claim programming consisted of three units and 35 people. The prototype was installed in the Southern California and Westlake Offices. Because of its immediate success the prototype became a production system for which it was never intended.
>
> ". . . By December 1982 there were four HP 3000 systems and 698 terminals installed. Plans to expand the implementation beyond the two California Offices were also made.
>
> ". . . By the end of 1983, Audatex, Case (Computer Assisted Structural Estimating), and Contents Inventory System had been piloted using PCs. These were estimating systems for Auto and Fire. The division now consisted of six units and 77 people."

Many additional changes were made to the system by 1989, when a 1989 study resulted in a decision to remain with Hewlett Packard. Several major functions were added and by the end of 1989 there were 690 HP Systems in the regions; 560 remote sites; 23,300 terminals; and 3,450 PCs installed.[138] There were 872 offices out of 934 using the Interactive Claims System.

The Investment Accounting Minicomputer Experiment

Although we had resisted the movement to minicomputers in previous years, as more and more minicomputer companies were entering the market, additional State Farm Departments were requesting permission to install a minicomputer in their departments. Perhaps the most persistent and maybe most viable department for an experiment in this direction was the Investment Accounting Department. Therefore, after months of investigation and discussions, DPEO approved a set of guidelines on December 27, 1977 designed to establish standards for minicomputer use within State Farm Mutual.

Those guidelines were the result of considerable work on the part of two major committees that had been established in 1976 when interest in minicomputers became a serious issue in State Farm Mutual. Those two committees were the Minicomputer Steering Committee and the Minicomputer Development Committee. The membership and purpose of those two committees were:

Minicomputer Steering Committee:

Ron Hill
Frank Barbiero
Dan Heaton
Bill Priess
Vincent Beggs
Merrill McCall
Myron Willke, Chairman

Those members represented primarily Investment Accounting and Data Processing personnel.

The primary responsibility of this committee was as an oversight group which reported to Data Processing and Corporate management and was accountable for the success of the project. That included recommendations as to the objectives of the project, equipment, costs, and development of overall plans. The Steering Committee was also responsible for monitoring the progress of the Minicomputer Development Committee.

The Minicomputer Development Committee:

Bill Jordan
Roger Ryon
Dan Heaton
Harry Ziegler
Bill Priess, Chairman

The Minicomputer Development Committee was responsible for the framework of a pilot operation, the hands-on detailed implementation of the plans, and the operation of the pilot system. This committee met with and reported regularly to the Steering Committee. Many other individuals in various interested departments also attended some of the committee deliberations and were of considerable assistance to the two committees.

Those committees and plans were established after considering pilot operations for the Personnel Department employee profiles; the Management Assessment Register; the Credit Union System; and, the Administrative Services Corporate Stock Records as well as the Investment Accounting project which was selected.

The committees had completed their work and a proposal was presented to management on November 15, 1977. Management approval of the proposal was received on December 20, 1977 in a memo prepared by Norm Vincent. The approval provided for the immediate ordering of a Honeywell minicomputer on a lease basis with a purchase provision which could be exercised later.

The January 31, 1978 report on the pilot operation revealed that the Investment Accounting Department would receive the Honeywell minicomputer on May 1, 1978. (The actual installation date was May 16, 1978). The system would be initially leased on a 6-months lease basis in order to examine its performance and return it in 6 months if the performance was unsatisfactory.

The operation was planned to be completely independent and under the control of Investment Accounting with close consultation with the Data Processing Department technicians, especially Bill Jordan who would be the primary consultant.

The purpose of the pilot basically was to determine the feasibility of a minicomputer stand-alone operation in a Home Office general department and to provide information for further considerations of this concept for other interested departments.[130]

The pilot system was installed without any problems, exceeded all established goals and after a full year as a leased stand-alone computer it had exceeded all previously established standards. In a report to every executive interested in the project with a copy to the Electronics Committee, that report revealed that the Honeywell lease contract had been exchanged for a purchase contract which included the computer, peripherals, accessories, and extra software with a net price of $65,988 after applying a purchase option credit of $10,677. This contract had been negotiated with David Nuckels, Honeywell Representative, who was exceptionally fair and professional in all of our negotiations.[131]

The purchase contract also included additional equipment needed to connect the minicomputer to the large systems in the Home Office Data Center and thereby would operate not only as a stand-alone system but also in an on-line environment. That contract proved to be one of the best ever consummated by State Farm Mutual since that computer remained operational with very little attention or problems until early

1992 when it was removed from the Investment Accounting Department operations permanently. This Investment Accounting Honeywell system became the very first significantly successful minicomputer operation at State Farm Mutual.

Other Significant Technological Advances During Era

One of the lesser but significant technologies implemented during Computer Era V was the installation of the Information Management System (IMS), an IBM product which operates outside of the Operating System whether it is the MVS or Virtual System, known as VS1.

Its primary function is to manage the interface with the Data Base and the terminals used for information retrieval and the processing of application programs involving those terminals.

IMS acts like an application program itself by which production application programs are interfaced with the entire computer system. In simpler terms, it is the management system that makes the entire system work by coordinating the technology between the Data Base and applications that are processed via the terminal. Late in that computer era, we purchased a Teleprocessing Network Simulator which facilitated testing IMS in a simulation mode as if terminals were on the system or as if more were on the system than were actually attached. It proved to be a great testing time-saver.

Another technology proposed and advanced by Peter Browne, data processing's first Computer Security Manager, was for the Data Processing Department to install an IBM System/7 as the most reliable security system available for security of the computer rooms initially installed in rooms A3 and B3. Later this was extended to other computer rooms as required.

Browne made his original recommendation on May 5, 1972, the recommendation was approved, and the computer installed on December 1, 1972. Besides Browne, the first manager, Walter Ohler was the first Security Superintendent for the Auto Co., and Dick Hoffarth, the first Data Processing Security Administrator.[132] With Browne ultimately resigning from the company, and Ohler becoming a State Farm agent, Clint Whitlow replaced Hoffarth as the Data Processing Security Administrator in March of 1980. Dick Hoffarth assumed another position in the Data Processing Department.

The original purchase cost of the System/7 was approximately $52,000. The system had been upgraded several times since 1972 with the most important being the upgrade which provided monitoring of the Services Facility. Additional upgrades were made in 1985 and the entire System/7 concept was replaced with a new Corporate Security System during 1990 with the final release of the original System/7 in October 1990. With the round-the-clock monitoring via the System/7, it proved to be a very good security system for those many years.

Although I have tried to avoid editorializing in this book, I must say that I am extremely pleased that State Farm has placed so much emphasis on security measures; however, I frequently see breaches of security when employees let other employees or whomever walk in "with" them without the use of the security card. Perhaps the most important security risk to be noted in a book about computers is the menace of computer hackers. State Farm again takes great care to thwart this type of risk; nevertheless, it is my contention that computer hackers are the most dangerous security risks around. An Associated Press article featured an article recently indicating that hackers stole $12 million in free phone service through the Johnson Space Center.[133] It is my belief that this is only a "tip of the iceberg" which can be solved only if every *honest* person becomes a security agent for his or her company and reports *every* observed breach of security. If not, it can lead to an enormous disaster. It is extremely important to protect your company!

A number of other computer related technologies were tested, approved, and ultimately implemented during that era. Among them was the installation of the IBM 3800 high speed printers which were exceptionally beneficial for very high volume printing tasks.[134]

John Chambers, DP Manager in HODC, informed me that the first 3800 was installed by the Fire Company in 1975. The first 3800 was installed in HODC in 1977 with a second system installed in 1980. More have been installed during the 1980's.

Peak utilization of the HODC 3800 printers consumed about 100 boxes of stock forms which translated over a month's period to about 7 million linear feet of print stock. That translates into about 1325 miles of paper per month or more that a third of the distance from New York to Los Angeles. That illustrates the immense speed of those systems which can readily handle 2.5 million feet per month on a roll type paper feeder. However, the installation of interactive video terminals has steadily reduced the printing volume which may lead to the long-discussed "paperless" society.

New State Farm Concepts, Programs, and Objectives

Although the new technologies explained above were more exciting to install, nevertheless some of the most important activities during the era had little to do with new computer technologies. Some of the most cost-saving results were those stemming from new ideas and concepts. Therefore, I shall identify and briefly explain some of the more important of those concepts, programs, and objectives.

Roger Joslin, Senior Vice President and Treasurer, on July 10, 1973 "got the ball rolling" by encouraging a study within the Data Processing Department for the purpose of accelerating the research of other departments, especially the Accounting Department, as to potential tasks that even at that late date in data processing history were still being performed manually. That led to a number of new concepts such as better and more automatic handling of renewal payments, etc.

Another concept which received much emphasis was the establishment of the Five Year Planning Program for the Data Processing Department on December 6, 1973 followed by a similar Five Year Planning process inaugurated for the Home Office Data Center and Regional Data Centers on January 29, 1974. All of the new planning concepts were inaugurated through decisions reached by DPEO. Previous planning had been limited primarily to single-year plans.

On October 4, 1974 under the direction of Vincent, we placed more emphasis on inter-company cooperation which in some instances might even have been considered inter-company research. Those areas of consideration were education, measurement studies, microfiche/microfilm, information privacy, licensed software, Control Program Support, utility programs, data base management, minicomputers, OCR-IBM 1288 System, and future hardware and future systems. Much of this did become reality as we began the serious acceleration of interlocking Fire Company and Auto Company operations into a single operation within a single data processing department.

That consolidation, which was partially explained earlier in this book, was a four pronged process beginning in the early 1960's. Those four steps were essentially these:

1. During the early 1960's, the Fire Company regional processing was consolidated with the Auto Company regional processing so that during that period all Fire Co. data processing was performed on Auto Co. computers. Fire Co. costs were distributed to the Fire Company financial reports. Fire Co. Home Office processing continued to be done on Fire Co. computers.

2. In 1973, the initial financial integration began with the fiscal responsibility of Fire Co. data processing operations being transferred to Joslin, then Vice President and Comptroller.

3. In 1978, the full consolidation of Fire Co. fiscal and data processing operations with the Auto Company equivalent activities were completed. With that consolidation, Edward Shelley, Fire Co. Vice President-Data Processing became a member of DPEO as explained earlier. All actual Fire Co. computer operations except MIS, managed by Mert Walker, were transferred to form a joint computer operation within the HODC.[136]

4. In 1980, all remaining Fire Co. data processing operations were consolidated with the Auto Company, thereby the consolidation of the two data processing departments was complete. Shortly, thereafter, Mert Walker, after my retirement, became the fourth member of DPEO.

Health Department Operations Decentralized

The Health Insurance operation began in late 1964, explained in Chapter IV, as an entirely Home Office based operation meaning that all manual and computer work for all states was performed in the Home Office. Those operations remained in that mode until 1974 when the "Health Data Processing Decentralization Proposal" written by Dick Andes was presented to DPEO on May 3, 1974. The purpose of Andes' proposal was to reorganize and update the data processing programs and procedures for health processing which had not been updated essentially since the initial programs of 1964. That proposal was approved by DPEO and ultimately approved with some changes by top management.

Health operations were under the direction of Robert Bischoff until 1968 when he was named Regional Vice President-Mountain States Regional Office. At that time, the direction of the Health operations was transferred to Marvin Bower, Executive Vice President of the Life Co. Bower introduced many innovations into the health programs in order to give the agency force an expanded and more saleable product. That phase was nearly completed by 1972 when a new generation of health insurance products was introduced. The result was a considerable growth in the health insurance transactions resulting in a commensurate growth in the programming requirements.[152]

By 1974, Health Insurance Department was handling an average of 3348 applications per week. That growth enabled the Health Department to be listed as the 30th largest health insurer in the United States. That was also one of the motivations for the proposal for decentralization mentioned earlier. With the continuing tremendous growth of the entire health operation, decentralization of the health processing to the regional offices was begun on June 2, 1975 as a pilot operation in the Illinois Office. Although the pilot operation in Illinois was very successful, no additional states or regional offices were decentralized until 1983.

The primary reason for that delay appears to stem from the very significant changes and improvements in the health insurance product and product lines. The official decentralization began in June, 1983. The order of decentralization began with the largest regional health operation and ended with the smallest in November 1985. Decentralization was finally complete.

Additional Concepts and Programs Studied and Implemented

A Project Control System was inaugurated on December 19, 1974 under the direction of Elmer Bullard, Assistant Vice President-DP Administration. After several false starts and especially the tendency by the programmers to aim at the "perfect system", Bullard was able to get it back on track with these three simple goals:

"1. It should provide a historical data base of costs of project development which should help us do a better job of estimating future projects.

"2. It should provide a simplified means by which we can get cost information for a charge back to users if or when we desire to go to such a system.

"3. It should provide enough control information to determine where we are in the development of the project and help us in planning meaningful realistic implementation dates.

The system finally implemented was the Project Reporting System created by Dick Wadley and a committee under his direction which incorporated the above listed criteria. The system ultimately replaced an earlier version known as PC-70 and went into operation in early 1975.

During Computer Era V, the Data Processing Department sponsored several projects which were important to the operation of the department itself. Some of the more noteworthy were:

1. With the increasing interest throughout the company in computerized microfilming, there was the companion interest in the various types of microfiche viewers available on the market. A demonstration was held in the old Home Office Auditorium and was under the direction of Kenneth Reeser.

   Many vendors brought their products to the demonstration which was an all-day affair held on December 9, 1975 and visited by many executives, managers, and employees with different interests in the potential of those devices.

2. On November 28, 1976, a "Maturation Report" was presented with the objective of determining the profile of the Data Processing Department in terms of the maturation of employees in classes C7 through MA5. To our astonishment, we found an overwhelming percentage of the employees of the department in the very young category of the "twenties" and early "thirties" age brackets.

3. On March 3, 1977, a joint study was conducted by Weyland Ginther, IBM; Bob Solomon, Administrative Services; and, Myron Willke, Data Processing, to determine the feasibility of installing a computerized Environment Control System for the Corporate Headquarters Building. After an extensive study of the merits of the system versus the original cost and ongoing operational costs, it was decided that it was not cost effective and the study was abandoned.

4. On March 22, 1979, a new pre-employment programming aptitude test was approved by DPEO and was given to Rich Buchanan, Hiring

Supervisor, and Kenneth Christensen, Training Supervisor as their responsibility for implementation. My records do not reveal the exact changes built into the new test but in general it is my recollection that the test scores were "tightened".

5. In 1973, the State Farm Legal Department became interested in the first and at that time a very elementary legal computerized research system, named the Lexus Research System, produced by the Mead Central Corporation in cooperation with the Ohio Bar Association. The objective of the system was to be able to find the statute or code number of any statute desired by entering pertinent information. It was primarily a system designed around a specific indexing algorithm.

   Information included in Lexus included case law, state statutes, and gave the status of cases at the different levels in the federal and state court systems.

   It proved to be too cumbersome and did not work well enough for the Legal Department needs. After consultation with data processing personnel, it was mutually agreed to discontinue study of that product at that time.

   After years of continuous research into the attributes of others legal systems including the Westlaw System, on August 19, 1980, the Legal Department and DPEO was given a demonstration of a much improved Lexus System which would furnish the user with instant feed back of legal statistics of many different types. This was built with many more attributes than the original system. DPEO was invited again to help assess its value. The decision was that it had many fine attributes but it needed some additional fine tuning. This was shortly before my retirement but the system was steadily improved by the vendor and ultimately during the early 1980's it was placed into operation in the State Farm Legal Department.

Data Processing Hiring & Training Concepts & Changes

Considerable changes transpired during the 1970's as to hiring and training of new data processing employees—particularly training concepts and methods. As an introduction to those changes, it may be well to review briefly the different concepts used over the life of the data processing history at State Farm.

Initially in the 650 era, Era I, we received from IBM operating manuals which they furnished without charge under their "bundled" program which simply meant that the lease rates for the equipment paid for books, training, etc. Much of the training was done by IBM technicians but those of us in supervisory capacities did most of our own training. Personally, I did not like IBM's training methods of that era.

In the 1960's, much more training was done by the IBM Systems Engineers who were stationed in our department. We continued to do a sizeable portion of the training. My appreciation of their methods had risen substantially because the quality of that training also had improved. IBM also added classes not only in the Bloomington IBM Office but also in Chicago, Illinois, which were much more accessible than earlier classes which required our traveling to IBM facilities in Peoria, Illinois, or to New York State at Endicott or Poughkeepsie.

By the 1970's, we had installed our own classes and instructors. As mentioned earlier, the pioneers in this regard were John Wilkens who established the first classes and Ken Christensen who established the formal class structures and was the first "professional", teaching not only Pl/1 programming but added many other features which meant a truly professional product for the new employees. Included among the new concepts were structured programming, data base management, and additional programming languages such as Cobol which previously had been used only in the Fire Company.

During that era, a great addition to the training structure was better materials. For example, for the classes on structured programming, a Fact Sheet was provided explaining the Who, What, When, Where, Why, and How facets of that concept. A very beneficial tool indeed!

In 1978, a Data Processing Management Orientation Program was instituted. This program had a dual purpose of introducing "high level exposure" of the "high potential regional personnel" to top management of the company and key department managers residing in the Corporate Headquarters. This was an 8-day orientation program. Its main objective was to permit those exchanges to result in a mutually beneficial understanding of each other's position in the company and the problems faced by each party.

During the eight years of Era V, the number being hired rose steadily as the demands for more programs increased dramatically. As a result we had 28 trainees in 1973 which rose sharply to 87 in 1980. Rich Buchanan, Hiring Manager for data processing informs me that the hiring requirement more than doubled during the 1980's with 189 trainees on board in 1990. Obviously, State Farm followed precisely the Affirmative Action Guidelines which were specified for the hiring of data processing employees.

This entire effort was capped with a "Post Hiring Plan" approved by DPEO on February 7, 1980. That plan was designed to improve the coordination and absorption of new employees into the work force. This program was formulated through the combined effort of the Personnel and Data Processing Departments.[26] The end result was that throughout the era, the turnover rate in data processing was approximately 10 percent which was considered very low because of the many opportunities available for all data processing employees at that time.

New Types of Data Processing Conferences and Meetings

This Computer Era continued the practice of holding Data Processing Managers Conferences regularly which had been initiated many years earlier by Marquardt and Dierkes. During Computer Era V, most of those conferences continued to be held at the Corporate Headquarters. However, a significant change during the 1970's was that occasionally they were held away from the Corporate Headquarters. Also occasionally they were divided into more than one conference for logistics reasons. Those concepts, initiated primarily by Joslin and Vincent, were intended to give the conferees an opportunity to get away from the constant corporate atmosphere and give them a chance for "a breath of fresh air". It is my opinion that it worked well, was cost effective, and was very much appreciated.

To list all of those conferences or discuss the details of the agendas of all of those conferences would not be in tune with the purpose of this book. However, it may be of interest to describe the location and agenda of some of the more memorable conferences.

One of those conferences was a planning conference for Data Processing executives and managers held at Turkey Run in Indiana. It was a 3-day affair held in an informal atmosphere and a beautiful fall setting. The purpose of the meeting was to plan for the next fiscal year in an atmosphere conducive to "unstinted" planning which was exactly the result of the conference.

An entirely different type of conference held away from the Corporate Headquarters was convened at the Hyatt Regency Hotel in Houston, Texas from October 21 through 25, 1974. That conference was one of the first held for all Regional Data Processing Managers including some Regional Vice Presidents and Regional Deputy Vice Presidents away from Bloomington. The conference was also attended by a few corporate executives.

The agenda for the Houston Conference was not a great deal different than the usual DP Managers Conferences held in Bloomington, but by being held in Houston it produced a feeling of informality not possible within the Corporate Headquarters.

A third type of conferences held during that era were Zone Conferences. For example, in 1975 four Zone Conferences were held for the Regional DP Managers and executives in four different cities on four different dates during the year. State Farm regional offices had been divided into four zones for offices that logistically were best suited to fit together into one of the four zones. That also fit well into the Data Processing Consultant scheme discussed earlier with a different consultant assigned to each of the four zones.

Those zone conferences tended to get into considerably more detailed discussions about regional office problems emanating principally from data processing functions and activities. As a result, unlike the full Data Processing Managers Conferences, executives from the Home Office also would often attend only one or two of the Zone Conferences thus spreading the work load to give some relief from their very heavy schedules.

For the year 1975, my records do not reveal where all four conferences were held but the conference for Zone II that year was held for 3 days in Austin, Texas. While I attended and participated in that conference, other members of DPEO probably attended one of the other three zone conferences.

For the record, another planning conference was held at Turkey Run, Indiana from September 20 through 23, 1976. That conference had several important items on the agenda, but emphasis that year was on the topic "Career Planning".

Back at the "shop" in Bloomington, on January 11, 1977 a new type of joint-staff meeting was inaugurated between executives and mangers of the Service & Systems and Data Processing Departments. For many years the data processing function then known as EDP Research was a part of the Service & Systems Department. This provided for an easy liaison between the data processing functions and the Methods & Procedures Section of that department. With separation of the two functions into separate departments, there was a recognized need to convene regularly in order to coordinate activities and discuss mutual problems. That was the motivation for the new joint-staff meeting which convened thereafter every month. The meeting dealt with problems and activities at a very high level and proved quite successful.

In 1979, the Regional Office Data Processing Conference was held in beautiful Salt Lake City from August 14 through August 16. That was a very well attended conference with many Regional and Deputy Regional Vice Presidents along with other corporate executives in attendance. This conference will be remembered for the unfortunate fate that befell Elmer Bullard, a mild heart attack, during the conference. Thankfully, Bullard returned to work within a relatively short time.

Without a doubt, the most memorable of all data processing conferences for me was the very last one which I had the privilege of attending before my retirement on November 11, 1980 in Bloomington. This conference was a 2-day conference instead of the usual three but to me and for many it will be remembered for the extraordinary fun-filled conference dinner held at the Central Station restaurant. The "tone" for the evening was set when Dave Homewood, DP Manager of the Southern California Office entered the room dressed as a clown. Dave, who often played the part of a clown at parties in California, put on "quite a show" which simply helped make the evening an overwhelming success as well as set the tone for me as I was honored to give my "Retirement Farewell Address" at the conference. It was naturally one of the most memorable experiences during my nearly thirty four years at State Farm.

Data Processing Visitors From Foreign Countries During Era

Interest in our systems by data processing representatives from foreign countries waned as they became much more sophisticated in their own data processing shops. Nevertheless, we still attracted two of our most loyal friends from France and Germany. This time we had also a new visitor from "down under" Australia which had made significant strides during the decade of the 1970's and wanted to compare ideas.

Jean Barroux, then representing the data processing function of the Groupe Druot Insurance Company of Paris, France, spent two days with us—November 14 and 15, 1973. Interestingly, I had not heard from Barroux for over a decade when I learned in 1990 that he had resigned from Groupe Druot and had assumed the position of Chairman of the Board of the Abeille Assurances of Paris. The interesting facet of that move was that the predecessor of Abeille Assurances was the LaAbeille Auto Insurance of Paris which sent two data processing executives to this country in the late 1950's to spend two months studying our system. You will remember from Chapter III that those two men, Jean Festeau and Albert Poirier, were our guests at a time when European data processing was merely in the planning stage.

Another regular foreign visitor who visited State Farm on March 18, 1976 was Dr. Hans Willy Shaefer from Munich Germany. Dr. Schaefer was the Vice President of Data Processing of the Allianz Insurance Co., the largest in Germany and of all Europe. Dr. Schaefer visited the company the first time in 1958 along with Dr. Mueller-Lutz, then a Vice President of Allianz Insurance Co. Dr. Lutz did not return to the United States but Dr. Schaefer, returned several times during the 1960's and for the last time with his 1976 visit.

Schaefer will be remembered by members of the data processing staff of the mid-1970's as the visitor who donated a large 4 ft. X 8 ft. picture of Munich to our department. That picture was attached to the south wall of the department conference room located near Norm Vincent's office and remained there for many months.

Dr. Schaefer and his wife, Annelisa, were personal friends whom my wife and I visited in Munich twice, the last time in July, 1990. Unfortunately, at that time he was suffering from cancer and passed away one year later in July 1991. State Farm and the Willke family lost a very good friend.

The third foreign visitor in the late 1970's was Terry Denne, an executive of the Australia Insurance Co. Denne spent considerable time with Norm Vincent and myself investigating our data processing insurance operations. His primary interests were our Delta System and our work on ECHO. Of the two systems, perhaps his greatest interest was in our agents' computer systems since he had not been exposed to that type of system which devoted so much of our resources exclusively for the benefit of our agency force. Having had the opportunity to meet dozens of foreign data processing executives over my lifetime, with my retirement in 1980 that opportunity no longer existed and is one that I truly miss.

Corporate & Data Processing Management Changes & Retirements

Roland Marston, after his return from the North Central Office as Regional Vice President in 1972, was named Vice President of the Automobile Company.[140]

Elmer Bullard was named Assistant Vice President-DP Administration in October 1973.

February 22, 1974 was a sad day for the State Farm family as the third president in the history of the company, Adlai H. Rust, Chairman of the Board Emeritus, passed away. State Farm Mutual has had five presidents and it had been my good fortune, as it has for many others, to know each one personally and quite well.

Jay Edmondson was named Vice President-Service & Systems upon the retirement of C. A. Marquardt on December 31, 1974.

James Hickey, now deceased, retired on February 28, 1975. Hickey was one of the "four horsemen" who founded the Electronic Research Unit, the forerunner of the Data Processing Department, on January 10, 1955.

Royal J. Bartrum, Claims Vice President, retired on September 1, 1977 after a 41-year career at State Farm. Bartrum had been Vice President-Claims since 1955.

Thomas Morrill, Vice President, retired December 31, 1977. Morrill had been affectionately named "Mr. Outside" by President E. B. Rust, Sr. because Morrill directed "outside affairs" for so many years.[141]

A retirement luncheon was held for A. H. Dierkes on February 28, 1978 at the Lakeside Country Club and retired effective March 1, 1978.

The ALFI News of June 2, 1978 announced the death of H. L. "Tyne" Mecherle, son of the founder G. J. Mecherle, at Naples, Florida. Mecherle joined State Farm in 1939 and held several executive posts as well as being a member of the Board of both the State Farm Fire and State Farm Life Co.'s

The ALFI News of October 20, 1978 announced the retirement of Robert O. Noel, Vice President-Operations. Noel began his career in 1941 and had held many jobs including the responsibility of overseeing the Administrative Services, Audio Visual, and Personnel Departments at the time of his retirement. (My first contact with Bob Noel was as Claims Superintendent of the Iowa Division in 1947. Bob Noel was always ready to help and advise me as a State Farm newcomer.)

Myron Willke as a member of DPEO assumed direction of the Internal Support Division on June 14, 1978.

DPEO was reorganized on July 1, 1978 when Edward Shelley became the fourth member after the retirement of A. H. Dierkes earlier in the year.

Dr. Norman Vincent moved back to floor A4 from E11 on November 28, 1978 after being on E11 since 1976.

State Farm was again shocked to hear of the sudden death of Richard F. Stockton, retired Chairman and Treasurer of the State Farm Insurance Co. on June 11, 1979. Stockton retired in 1977 after a 38-year career holding many of the top executive jobs in the company. Stockton, a military career officer in his earlier years, always showed an intense interest in my sons who also were making the Air Force their careers.

Morris G. Fuller, retired State Farm Life Company president, died April 14, 1980 at Fort Myers, Florida. Fuller was chief executive of the Life Company until his retirement in 1961.

Other Important Events which Occurred During Computer Era V

As a gesture to the public, State Farm held an open house of the new Corporate Headquarters for a period of 3 days from November 23 through November 26, 1973. State Farm has always had a very fine relationship with the local public and gestures such as opening the Atrium for use at Christmas, other special community events, and an open house such as this one in 1973 assures the continued goodwill of the local community which otherwise does not see the inside of this large building complex. Bloomington-Normal responded with about 400 persons per hour attending the open house which was set for the time period of 5 PM to 9 PM daily. The event was climaxed on November 26th when the radio station WJBC held its morning program from the Atrium.

The local community under the leadership of the McLean County Board of Supervisors, and the City Councils of Bloomington and Normal responded with its own goodwill gesture when it declared February 6, 1974 as "Ed Rust Day". Employees shared this day with Edward B. Rust, Sr. with a program in the Atrium. A reception was held after the Association of Commerce Dinner for which Mr. Rust was the featured speaker.

Another serious subject galvanized our attention in 1974—the need for a comprehensive "Multi-Company Disaster Recovery Plan".[143] This plan was formulated under the guidance of the Electronics Committee with special emphasis on the Corporate Headquarters. Jim Reynolds, Life Company, was named chairman of that committee.

The plan included information concerning the definition of a "Disaster"; physical locations for recovery; data processing hardware available, if needed; logistics for bringing necessary people together for recovery; and, the priorities to be followed in the event of a serious disaster.

The major emphasis of the plan was on the technical aspects of disaster recovery. The plan was completed by the committee, which in addition to Reynolds, included members from all State Farm Companies. The plan was submitted to and approved by the Electronics Committee.

Obviously, it was hoped that the plan would never be needed and to the best of my knowledge has never been used.

Another very interesting and intriguing subject was advanced by Norm Vincent in a memo to Roger Joslin dated August 12, 1976. The trigger for this memo was the possibility of a "problem of emerging excess manpower resources" as stated by Vincent. The reason for this potential was as Vincent explained, "On October 1, 1976, when the Sunland Office switches over to a 370/168 computer system, step one of the Delta implementation processing will be complete . . . there is growing confidence in D.P.'s ability to complete the conversion in other regional offices by mid-1979." (Which did occur as explained earlier in this chapter.)

Vincent continued, "It would appear that the phase-out of the 1400 system will free up some people, and after Delta has been installed, those involved in its preparation and installation should become available for other assignments."

Although I had been very much involved in those discussions at that time, those statements were so intriguing because over the entire history of data processing in State Farm Mutual from the first 650 system on, we have had similar fears of excess people once the newest system was installed. It never happened because the company always outgrew that potential and is continuing to do so today.[144]

However, in a recent discussion with Dr. Vincent, we agreed that with unexpected recessions, new unforeseen technologies, and possible unpredictable errors in judgment, we might indeed have an excess of data processing manpower sometime in the future. Hopefully, that will not happen with the future being as "kind" to State Farm as it has been over its first seventy years of existence; but, it surely is a potential problem for which future management must be diligent enough to thwart. I believe State Farm will!

Events Leading to Conclusion of Computer Era V

As we close out that era, we find that the United State had just completed a stormy presidential election with the somewhat surprising overwhelming victory by newly elected President Ronald Reagan, an ultra-conservative over incumbent President Jimmy Carter. The results in the Electoral College were so overwhelming that Carter gathered the electoral votes of only six states and the District of Columbia. Reagan garnered over 90 percent of the Electoral College votes.

The country had experienced some tragedies, some of which were caused by the policies of the administration and some of which the president was merely a victim—a recipe for a sure defeat in any election. Some of the most important issues of that election were a high inflation rate and an exceptionally high interest rate of 21 percent charged to anyone borrowing money—especially short term loans.

Perhaps the most devastating problem from Carter's viewpoint were the 52 American hostages captured by Iran. That was accomplished by over-powering the guards at the U.S. Embassy compound in Tehran. Aggravating the situation was a failed helicopter rescue attempt by the Carter Administration that ended disastrously in the Iranian desert. The final blow came on the very day that Reagan was inaugurated when all hostages who had been held by Iran for 444 days were released. Coincidence or by design—no one seems to know.[149]

As for State Farm itself, the company and data processing continued to prosper. Perhaps the most fitting event for the conclusion of this chapter for me would be my retirement from State Farm after nearly thirty four years of employment.

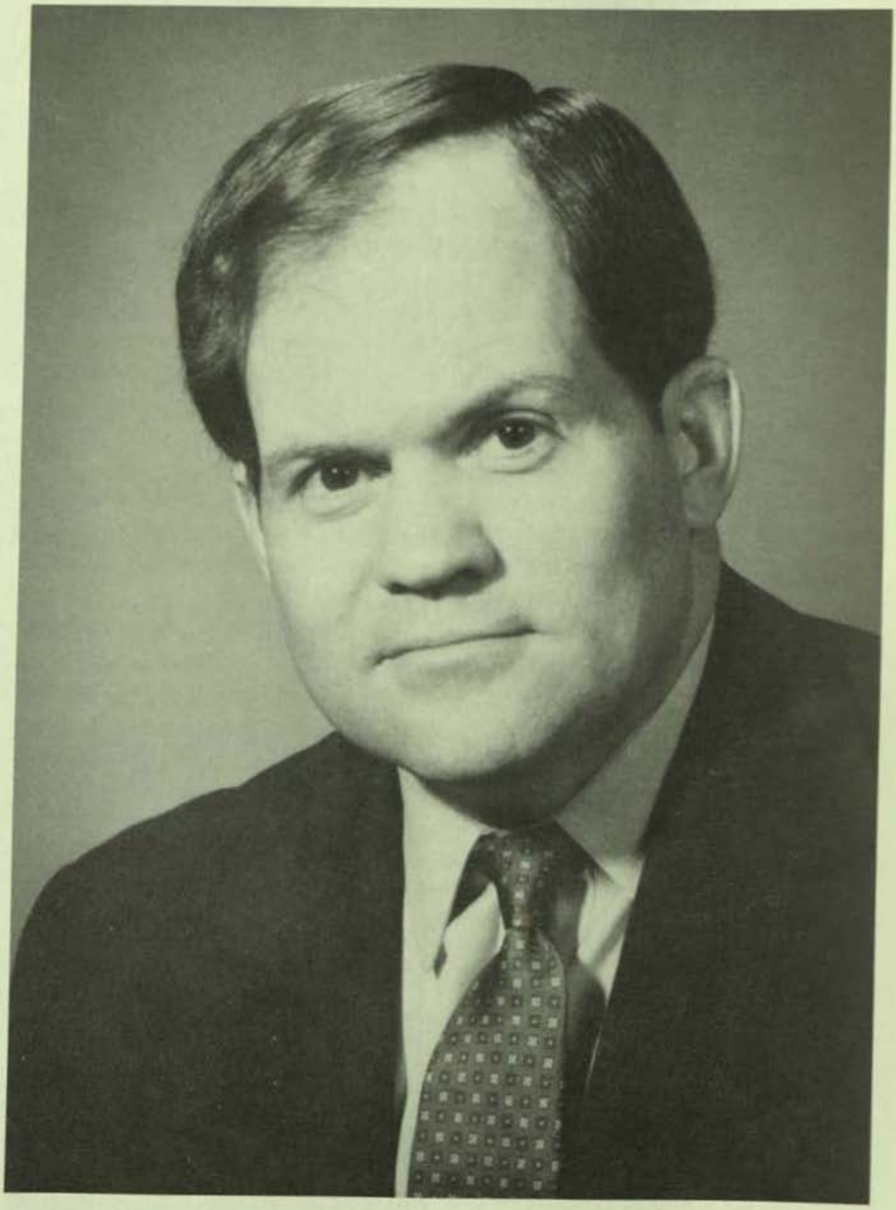
On April 2, 1980, my intention for an early retirement to be effective December 31, 1980 was announced at a data processing staff meeting. The staff was stunned because as one of my colleagues said, "I thought you would work forever."

In preparation for my exit, my duties were assumed by Elmer Bullard and Edward Shelley effective December 1, 1980.

By sheer coincidence, Norm Vincent kindly arranged a retirement luncheon for my wife, Freda, and me on my 60th birthday, December 17th at the Bloomington Country Club. About 30 invited guests, mostly close associates and top executives attended and gave me a new and valuable set of golf clubs. Conservative as I am, some say "tight", eleven years later I am still enjoying those clubs. My thanks to everyone attending that memorable luncheon.

Myron and Freda Willke in retirement.

My last actual work day was December 19, 1980 because of my father's debilitating stroke, which occurred on December 15th, although my official retirement was on December 31, 1980.



Edward B. Rust, Jr., President & Chairman of the Board — State Farm Mutual Insurance Company.

(Right) Elmer Bullard, Vice President — Data Process Operations.

(Left) Edward Shelley, Vice President — Data Processing.

(Above) 1980 Data Processing Managers Conference.

(Left) Merton Walker, Assistant Vice President — Data Processing.

Norman Vincent & Arthur Tompkins, Jr., discussing Real Time System — 1972.

Norman Vincent explaining the agents' Echo System to a few Regional Vice Presidents — 1978.

New State Farm Corporate Headquarters — 1972.

Corporate System Network Control Center — 1980's.

CHAPTER VIII

Age of Distributive Processing and Information

Computer Era VI — *"Sophistication"*
(1981-1990)

History is written most frequently by individuals who did not experience the activities about which they were writing. Often those activities occurred decades or centuries before the writers' own contemporary eras. This makes them no less authentic as historians but it does mean they must rely through careful research on subject matter written by previous historians or documentation written during the age when the historical subject existed.

Personally, therefore, I am in the position of the traditional historian when writing about Era VI which occurred after my retirement. Nevertheless, this book would have been woefully incomplete without "rounding" it out with information about the contemporary period. However, I am compromising this chapter to a very few pages of basic information and philosophy provided for me by very helpful colleagues who have supplied that information. I am especially indebted to Dr. Norman Vincent, Darrel Kehl, Roger Woodrey, and Al Creasy for the decision to write this chapter and the basic information included in it. Without their assistance, this chapter could not have been written.

Data Processing Lost Two Great Supporters

Before proceeding further, it is important to note that State Farm's data processing function lost two of its most ardent supporters by the deaths of Carl A. Marquardt and Edward B. Rust, Sr. during this decade.

On April 4, 1981, Marquardt, retired Vice President-Service and Systems, died in his home suddenly after an afternoon of golf. Marquardt was an avid golfer. He was my supervisor for nearly twenty years during which many of those years his overall responsibility included data processing as well as methods and procedures. His first love was primarily data processing.

On August 18, 1985, data processing lost an even greater advocate when Edward B. Rust, Sr., President, Chief Executive Officer, and

Chairman of the Board of the State Farm Insurance Companies died. Rust carried that avid interest into his private life by owning and using his own personal computer as well as being a member and supporter of a State Farm computer club, named the Scusers Club. Most important to me was the very important support that he gave me professionally during my data processing career.

Upon his death, his son Edward B. Rust, Jr. succeeded his father as the fifth President and Chief Executive Officer of the State Farm Insurance Companies. Rust, Jr. is also an avid supporter of data processing throughout the State Farm Companies. Today, E. B. Rust, Jr. also carries the title of Chairman of the Board.

The Age of Distributive Processing

The title of this chapter has been named the "Age of Distributive Processing and Information" because that is the basic direction of most of the technical innovations, basic objectives, and philosophy of the era. Some of those elements, especially the technical innovations, were extended and finely tuned whereas others were completely new designs and concepts.

State Farm's basic philosophy of the era was to bring data processing technology and the power of the computer as close as possible to the professional within the various Home Office departments, regional offices, claims offices, and most importantly, the agents. Much of this intent was incubated during the previous decade but was nurtured, vastly improved, and expanded tremendously during the 1980's.

That set of objectives meant that data processing systems were designed and improved to bring the triumvirate of over 17,000 agents, over 26,000 claims personnel, and over 26,000 regional employees located in 26 regional offices, into a very closely knit information network so that they could work together as one team. One might say therefore that it was a "Team Era" directed at a team concept both within the operations of each of the three groups as well as between those groups i.e. agents, claim representatives, and regional office people.

The team concept was fundamental, therefore, to the way State Farm did business in the 1980's which might be further defined as team work internally by way of a new operations management concept and externally by way of a very extensive nationwide teleprocessing network. The internal concept dealt with a revision in the Operating Division management structure of the insurance operation within the regional offices themselves. The extensive nationwide network embodied three basic components of the agents' ECHO System, the Claims HP 3000 system, and the use of the powerful regional IBM 3090 computers—together enabling all State Farm Companies and departments within those companies to communicate instantly with each other.

The Internal Management Team Concept

This concept, which was initiated in the 1970's and briefly discussed in Chapter VII, basically is a form of reversion to the company's philosophy of the period before the installation of Plan II in the 1940's. At that time much of the underwriting, correspondence, renewal paying, application handling, and claim information recording (on the x-card) was done in what was called the Underwriting Department. A similar concept prevailed in what was then a separate Claims Department.

The new team concept places nearly all phases of an insurance operation again into one unit for a specific set of local agents—everyone working as a *team*. The number of teams established was dependent on how many groups of agents were established for team purposes. The team management structure varied considerably depending upon the makeup of the teams.

The team structure thereby abandoned the concept produced by Plan II when underwriting was done exclusively in the Underwriting Section; correspondence, rating, input via either key punching or terminals, etc was done in the Service Section; and claim handling exclusively in the Claims Section. Furthermore, each Section dealt with all agents and claims personnel for the entire Operating Division whether it represented a portion of a state, a whole state or in former days, multiple states. So the new byword was "do your work as a team" and it has been quite successful. In addition, and this is quite important—each Operating Division and each regional office was permitted to convert to the team concept to the depth and degree which suited them best. (I believe, some divisions also had chosen to remain partially or totally on the old concept.) However, the company's basic philosophy was and still is teamwork!

The Nationwide External Team Network

This team network embodies the ability introduced earlier to communicate as a triumvirate of agents, claims, and regional activities. Inasmuch as all three segments were initiated in the previous era, I shall merely explain briefly the essential concepts which were expanded in the 1980's of all three areas of activity:

1. ECHO — Agents are connected to their servicing regional office via dial-up network. Updating business information from the regional office to the agent's office IBM Series/1 CPU occurs daily. In addition, claims are opened, some policyholder transactions submitted, and E-mail (Electronic mail) provided from the agent to the regional office. Plans are underway to replace the agent's Series/1 System with a low-end System/370 compatible with the IBM 9370.[145]
2. Claims — Over 700 Field Claim Offices are connected to their servicing regional offices over dedicated packet switching networks.

Each claim office supports up to 250 locally attached terminals on appropriately sized HP 3000 computers using the MPE-IV Operating System. Plans are in place to begin migration to HP 3000 series 900 computers using the MPE-XL operating system.

3. Regional Offices-Policyholder processing occurs in the 26 regional offices on one or two IBM 3090 model 200 CPU's. Major application support for auto, fire, and health policies is provided as well as for Accounting, Personnel, Agency Administration, and Administrative Services functions. All offices are connected through a leased network that has as its hub the Corporate Headquarters. Both interactive transactions and batch data transmissions are handled on the network.

Darrell Kehl, Vice President - DP Programming informed me that "future data processing plans will continue to emphasize the need for distributed processing throughout State Farm. Research is currently underway to aid in determining the impact of the personal computer. While no specific direction has been set, there appears to be the potential of a positive impact on our ability to deliver distributed data processing services." (This information was supplied in September 1990.)

The Evolution of Office Automation

Another entirely different concept was introduced within State Farm during the early 1980's——Office Automation. This concept was first recognized with the introduction of word processing architectures on a shared basis. That was followed by the powerful impact of personal computers.[145] PC's spread rapidly throughout the organization providing personal data processing facilities at the disposal of the end users. Expansion of the PC facilities was so rapid that it resulted in the exploding growth of Office Services—the organization within the Data Processing Department charged with providing office automation support.

Office Services was established in 1982 with a manager and six analysts. In 1990 it had grown to six units with over eighty individuals plus nine administrative staff personnel which support those rapidly expanding office automation technologies.

The Office Services function supporting an ever expanding need for more office automation promises to provide State Farm with a challenge in the future paralleling the already heavy burden of supporting the more traditional technologies.

Basic Changes In Operating Division Processing

While some of the changes in Operating Division processing occurred in previous computer eras, the dramatic changes in data base management during the 1980's caused similar significant changes in divisional processing during that period.[146]

Prior to 1980, the primary data base for policy information embodied the policy master records. During the Computer Era VI that also changed dramatically. At that time new data bases were established for dead records, household information, premium history, driver profiles, and claim history. That enabled all of the named information to be available immediately via on-line processing never before possible—primarily because the technology had not advanced sufficiently to make it cost effective.

Another quite significant change of divisional processing developed during the 1980's was the concept known as the Host/Off load method of placing a single operating division's records on a separate computer system dedicated to that particular division's records.[146] Some of the advantages included less down time for the dedicated division and also no downtime for the other divisions which had their own dedicated computer which most likely was operating at full speed.

Finally, as communications technology continued to become more sophisticated, it became possible to transfer policyholder data between divisions and even between offices. That innovation provides me with unusual opportunity as I get near the end of this book to say I have "gone full circle". My very first job at State Farm on January 6, 1947 was called "California Transfers". At that time, the only two offices of any size were the Home Office and the Western Office in California. (A very small office did exist in Canada.) Therefore, all interoffice transfers were between those two offices. My full time job was to prepare, control, and mail all transfer applications between those offices. Now, that is done electronically and if it had been available in 1947, I might never been given a job at State Farm. Amazing!

Conclusion

In the process of writing this book, may I say that it was an exhausting but pleasant task. May I add that through the assistance and perseverance of many helpful former colleagues and many hours of personal research, I learned an enormous amount of information about the companies I would otherwise never have known.

Over the years covered by this book, State Farm grew from a two-person operation in 1922 to one so large that thousands of agents and employees support a total insurance clientele of over 60 million policies in force and growing. Daily, financial and operational numbers are added steadily countrywide. Those facts make me extremely proud to have played a small part in such a vibrant organization and therefore happy to have had the opportunity to write about its data processing history. I firmly believe that I had the opportunity to live and work through the country's and State Farm's greatest economic period to-date. A period after World War II with steady growth, steady employment, and no fear of job restriction or loss. Yes, a period of great enthusiasm for new concepts and an abiding optimism for the future.

I wish to repeat an earlier caveat for readers who have never had the privilege of being closely attached to State Farm. It is my fervent hope that you enjoyed the book but if much of it was too "personal" or "over your head", please be reminded that it was written primarily for the purpose of being a documentation of the early history of record keeping prior to computers and during the computer eras of State Farm Mutual Insurance Co.

Most importantly, it was intended to inform State Farm colleagues of the early history of data processing and computerized activities within State Farm Mutual which otherwise might have been lost to posterity.

Although I have been urged to incorporate my thoughts about the future of data processing in State Farm, which I have declined because it would not serve any useful purpose; nevertheless, I will make two "dangerous" predictions about the future of data processing in general, which I believe will happen during the next 75 years, possibly within 50 years, or it will never happen:

1. The position of programmer will completely disappear with the invention of computer self-programming built into the hardware.

2. Computers of the future, whether small microcomputers or super computers will be simply assembled from standard modules, not manufactured.

As to the programmer, he/she will be replaced with a "parameter specialist" who will by voice tell the computer the parameters of the task he/she wants the computer to perform within the limits of the computer's ability. The computer will then program itself according to those parameters.

As to the future computer technology, there will be only a single-sized self-contained module which will be standard for *all* computers which will be "assembled" using the exact number of modules needed for the desired computer. Those modules will fit either small personal computers up to the largest super computers depending only on the number of modules required for the intended system. Computers of the future will not be manufactured but assembled depending upon its size and purpose of use. It will be only the different competitive modules which will be manufactured.

The great benefit will be that nearly any type of computer can be assembled for nearly any level of requirement merely by the assembly of the needed number of uniform modules. All connections will be so standard that they merely need to be hooked together.

All memory and storage will be handled through static devices which will fit into separate but similar modules also assembled with the computer modules. I do not agree with the common view that printing will disappear entirely. I believe some type of printing will always be needed but for archive purposes and reading for pleasure.

Alas, that is the future for both programmers and computers. However, if you are a programmer, do not look for another job, you will be needed for a long time!

Remember, if my prediction is correct, you read about it here first—if not, forget it!

Appendices

APPENDIX A — *Significant Dates Included In This Book*

The most important dates and the events which occurred on or are associated with those dates described within the chapters of this book have been grouped for rapid referencing into three chapter segments in chronological order:

Chapter I—Early History of Computers prior to 1955
Chapter II—Record Keeping in State Farm Before Computers
Chapters III Through VIII—All Computer Eras at State Farm

Chapter I — Early History of Computers prior to 1955

Date	Event
Ancient Ages	Abacus used in ancient civilizations and pre-christian era in China & Egypt.
Year 1642	First Calculating Machine—Invented by French Scientist, Blaise Pascal.
Year 1672	First Calculator that could Multiply, Divide, and Extract Square Root—Invented by Wilhelm Von Liebnitz.
Year 1820	Analytical Engine—Invented by Charles Babbage.
Year 1884	Hollerith Tabulating Machine—Herman Hollerith took out first patent and in two years had developed a successful machine.
Year 1924	International Business Machines—Thomas Watson, Sr. changed name of CTR to IBM.
Year 1930	First Analog Calculator built by Vannevar Bush.
Year 1943	IBM Mark I—First Electronic *Calculator* built by Howard Aiken, IBM—for Harvard University.

Date	Event
Year 1945	ENIAC—First Electronic *Computer* built by Dr. J. Presper Eckert and Dr. John Mauchly at University of Pennsylvania. This computer was built for the scientific market. (See details about John V. Atanasoff, later judged builder of first Electronic Computing Device.)
March 1951	UNIVAC I—First Electronic *Computer* for the commercial market built by Drs. Eckert and Mauchly, delivered to the Census Bureau.
Years 1950-1955	IBM built and marketed the 650 System and the 700 Series 701,702, and 705 Systems.
Year 1952	First presidential election when computers were used to predict the outcome of the election. UNIVAC I competed with the Monroe Calculation Machine Co.'s "Monrobot". UNIVAC I made first correct prediction but withdrew. The Monrobot held to its prediction and won.
Year 1956	UNIVAC began losing its No. 1 position to IBM as the world leader of large electronic computers.
Year 1957	IBM became the world leader in the design and production of large main frame computers.
Year 1968	Control Data Corporation initiates Anti-Trust action against IBM—the first major Anti-Trust suit against IBM.
Year 1973	ABC Computing Device—By court order John V. Atanasoff, builder of the ABC Computing Device, (it never evolved as a complete computer), was judged the inventor of the first "Electronic Computer" replacing the ENIAC as originally proclaimed.
Year 1975	U. S. Government opened it Anti-Trust suit against IBM. The actual preliminary inquiry began in 1964. The case was finally settled by dismissal on January 8, 1982.

Chapter II—Record Keeping in State Farm before Computers

Date	Event
June 7, 1922	State Farm Mutual Ins. Co. founded by George J. Mecherle.

Date	Event
June-Oct, 1922	State Farm located on 2nd Floor-Durley Bldg.
Oct. 1922	State Farm moved to Arnold Building—later named the McLean County Farm Bureau Building.
Year 1922	Adlai H. Rust began his State Farm career on a part-time basis. He had his own law practice.
Years 1922-1928	The Manual Processing Era—Transactions processed by pens, pencils and hand-operated adding machines.
Year 1924	State Farm moved back to Durley Building
Year 1925	State Farm moved to Odd Fellows Building.
Year 1928	Mr. Nagel—First ever IBM salesman serving State Farm. (First name unknown).
Year 1928	A. Edward Kitz, Arthur Eiff, and Herman Salch began their Accounting Careers at State Farm.
Sept. 1928	State Farm opened first Branch Office in Berkeley, California
Sept. 20, 1928	State Farm signed first-ever IBM contract to rent IBM Electric Accounting Machines.
Sept., 1928	Harold Mecherle—First head of State Farm Accounting Machine Operations.
Year 1929	State Farm moved into newly completed Home Office Building.
Year 1929	State Farm Life Insurance Co. organized.
Year 1930	Harold Mecherle transferred to Operating Divisions and later to Agency Department. Herman Salch became his successor.
Year 1932	L. L. Cox started his career at State Farm.
Year 1933	Frank Mittelbusher began his State Farm career in July, 1933—resigned in October—returned in March 1936—headed the new Statistical Department.
Year 1934	Arthur Dierkes began his State Farm career.
Year 1934	Carl A. Marquardt began his State Farm career.
Year 1934	State Farm added 5 stories to Home Office Building-south half of current Fire Bldg.
Year 1935	State Farm Fire Company organized.

Date	Event
Year 1935	Gilbert Brown, CPA, began his State Farm career and in 1937 was named its first Comptroller.
Year 1937	State Farm purchased Odd Fellows Building located on corner lot of Jefferson & East Streets.
Year 1939	First 8 floors of north half of Home Office Building built and ready for occupancy.
Year 1941	E. B. Rust, Sr. began his State Farm career.
Year 1945	By this time, State Farm was leasing nearly every major type of Electric Accounting Machine that IBM was marketing. That included the IBM 601 Multiplier, a very limited calculator.
Years 1945-1950	David Harsh served as IBM Sales Manager for State Farm.
Year 1946	Last 5 floors built on the north half of the Home Office building making it complete.
Year 1946	Sixteen Policy Writing Offices opened across the country. The first office opened May, 1946.
Year 1946	Premium Department established with Carl Marquardt as Manager and Arthur Dierkes as Assistant Manager.
Year 1947	Myron Willke began his State Farm career.
Aug., 1947	Plan II initially installed in Indiana with Keith Jump as Manager and Charles Beadles as Assistant Manager. Remaining Offices converted to Plan II within the next two years.
Nov., 1947	Planning & Research Department established with Carl Marquardt named as Director.
Years 1948-1955	Wendell Clithero and Jack Clatfelter began introducing IBM Electronic Computers to the Planning & Research and Accounting Departments.
Years 1950-1955	Jack Clatfelter served as IBM Salesman for State Farm.
Mar. 10, 1951	Founder and President George J. Mecherle died and was succeeded by his son Ramond P. Mecherle.
May 15, 1954	President Ramond P. Mecherle died and was succeeded by Adlai H. Rust.

Date	Event
Dec. 15, 1954	Decision reached to order IBM 650 Systems in State Farm Mutual and to release the test IBM CPC System.

Chapters III Through VIII—All Computer Eras at State Farm

Date	Event
Jan. 10, 1955	Data Processing founded at State Farm Mutual with establishment of EDP Research Unit. Members included Roger Woodrey, John Janes, James Hickey, and Myron Willke as Supervisor.
January, 1955	Iowa Division, after acting as 604 Program Test Division became first official Operating Division converted to a computerized division at State Farm Mutual.
Mar. 19, 1955	West Central Office, Lincoln, Nebraska, was the first regional office converted to computerized operations.
Aug. 15, 1955	First tests of 650 programs at Endicott, N.Y. Tests conducted by Roger Woodrey, John Janes, James Hickey, Myron Willke, and Robert King, the IBM Sales Manager for State Farm.
Years 1955-1958	Robert King served as IBM Sales Manager for State Farm. Feb. 1, 1956 Iowa Division was first Operating Division to implement the 650 System programs which were installed without incident.
Nov. 11, 1956	Southern Office, Birmingham, Alabama was the last regional office to install the new 650 System programs.
Feb. 5, 1957	G. Ermond Mecherle, "Ermie", died in Arizona.
Oct. 22, 1957	State Farm announced "possible" change in Regional Office management structures which became known temporarily as the "Y-Program".
Year 1958	Ken Karraker served as IBM salesman for State Farm for a short period of a few months.
Years 1958 to 1967	Glenn Reitzel served as IBM Marketing Manager for State Farm.

Date	Event
Years 1958 to 1963	Sam Chase, IBM Peoria Branch Manager, served State Farm in executive capacity.
Years 1958 to 1963	Guy McMillan served as IBM National Account Manager for State Farm.
June 3, 1958	Sweeting Building burned. State Farm over the years rented space in that building.
June 9, 1958	Adlai H. Rust elected Chairman of the Board and Edward B. Rust, Sr. elected President of State Farm Mutual.
Dec. 3, 1958 to Feb. 1, 1959	French Data Processing Executives from LaAbeille Auto Ins. Co., Paris, France spent two months studying State Farm computer systems.
Year 1959	Systems Development Unit, successor to EDP Research Unit, outgrew the location on the 3rd floor of Home Office Building and was moved to the 5th floor-south.
Year 1960	Norman Vincent began his State Farm career.
Jan. 20, 1960	Tested larger 4000 Word Drum for IBM 650 in New York City.
Feb. 10, 1960	Life Company received its RCA 501 computer.
June 6, 1960	First Data Processing Conference ever held was attended by 16 Regional Data Processing Superintendents in the Auditorium of the Home Office.
June, 1960	Richard Stockton elected Vice President & Treasurer of State Farm Mutual and Robert Noel was elected Vice President-Operations.
July 1, 1960	A. H. Dierkes named Director of the newly formed Home Office Data Processing Department (HODP) responsible for machine operations.
Years 1960 to 1967	Mel Deener served as IBM Sales Manager for State Farm.
Dec. 5, 1960	Myron Willke named Director of Electronic Data Processing Research.
Dec. 5, 1960	Edward Shelley named Asst. V. P.-Fire Co. as he began his State Farm Career.

Date	Event
Dec. 13-14, 1960	IBM machines in the Home Office Building moved to newly built Data Processing Annex attached to the Midwest Regional Office.
Dec. 23, 1960	A. H. Dierkes named Asst. V. P.-Data Processing and Clayton Sturgeon named Asst. V. P.-Methods & Procedures.
July 7, 1961	IBM delivered the first 1401 computer which was placed temporarily in the Midwest Office before being moved permanently to the Data Center.
Dec. 26, 1961	IBM delivered the first 1410 computer which was used exclusively for some time as a test system.
Sept. 17, 1962	Planning & Research Department moved from the 5th Floor-South to the 9th Floor-South with individual units moving to 1st Floor South and 10th Floor-South.
Oct. 1, 1962	Scheduled implementation of the 1400 System to begin operations in Iowa Division. Actual operations delayed until October 17, 1962.
Oct. 6, 1962	"Legendary Cot" brought into computer room for computer operators and systems engineers to use by taking turns to get sporadic rest.
Oct. 17, 1962 at 2:30 A.M.	Achieved the first acceptable production from the 1400 System for the Iowa Operating Division. A momentous early morning achievement!
Dec. 18, 1962	G. B. Brown, State Farm Comptroller, died.
Oct. 1, 1963	Decision reached to introduce Monthly Pay Plan to all agents in Illinois as the first state where the plan was to be introduced.
Dec. 31, 1963	EDP Research reorganized with Roger Woodrey named Asst. Director-EDP Research, and Richard Andes, Don Arndt, and John Janes were named Superintendents-EDP Research.
Years 1963 to 1968	Horace "Hoot" Gibson served as IBM Branch Manager in Peoria for State Farm.
Year 1964	IBM announces revolutionary new computer line named the 360 Systems which was destined to "drive" the computer market for the next decade or more.

Date	Event
Year 1964	Computer language Pl/1 chosen to be used with all System 360 programming at State Farm Mutual.
Year 1964	Roger Joslin began his State Farm career.
Year 1964	Health Insurance operations began in 1964 as an entirely Home Office based operation.
June 8, 1964	Myron Willke elected Asst. V. P.-EDP Research in charge of EDP Research Division of the Planning & Research Department.
Sept. 10, 1964	E. B. Rust, Sr. notified Planning & Research Department decision to offer Health Insurance in the Auto Company.
Sept 17, 1964	Began process of programming Health Insurance which was soon to be marketed.
Dec. 17, 1964	Real Time computer concepts introduced to State Farm Mutual's top management.
June 21-25, 1965	A formal paper named; "A Real Time System for the World's Largest Auto Insurance Co." was presented at the Guide International Seminar in Paris, France by Jacques Destombe, Chairman of the Seminar.
July 12, 1965	Seaboard Regional Office opened as State Farm's 21st regional office.
Aug. 27, 1965	Information released through the ALFI News that the 1400 System would be replaced soon by the new 360 System operating in an emulated mode.
Sept. 1, 1965	C. A. Marquardt announced that the Planning & Research Department had been renamed as the Service & Systems Department.
Sept. 30, 1965	EDP Research began exploring the feasibility of connecting selected regional offices with high-speed Telpak communication lines.
Nov. 9, 1965	Long-time Accounting Executive and Chief Auditor L. L. Cox died.
Nov. 24, 1965	Insufficient space in the Home Office forced Richard Andes to move his programming section to the second floor of the Data Processing Annex attached to the Midwest Office.

Date	Event
Dec. 12, 1965	New Electronics Committee with C. A. Marquardt as Chairman held its first meeting. The committee included representatives from the Auto, Life, and Fire Companies.
Mar. 3, 1966	Decision reached to use AT&T long lines for the new State Farm Countrywide Teleprocessing System.
July 9, 1966	First "EDP GOLF DAY" at Highland Park. This event is not to be confused with the first official "EDP OPEN" held in 1967.
Aug. 15, 1966	The Service & Systems Department including EDP Research moved from the Home Office to Towanda Ave. Building (TAB Building).
Sept., 1966	State Farm explored how best to establish Mutual Funds on a computerized system.
Oct. 15, 1966	Began designing the Real Time System by setting out the initial block diagrams.
May 16, 1967	Richard Andes named Director-Programming and Roger Woodrey named Director-EDP Research.
May 20, 1967	First official "EDP OPEN" held at Highland Park. Charles Cappis had the low score.
Dec. 1, 1967	EDP Research held its first and only dinner dance at the Illinois Hotel.
Years 1967-1968	Kent Savage served as IBM Marketing Manager for State Farm.
Year 1968	State Farm opened it 22nd Office in Monroe, Louisiana.
Year 1968	Joe Giroux named as the first Regional Office Consultant.
Nov. 4, 1968	John "Bill" Wilkens, first data processing Training Coordinator, hired by EDP Research.
March 6, 1969	Annoucement of promotion of Robert Deems as Director-Teleprocessing Systems.
May 22, 1969	State Farm began serious research into the potential of Computer Output Microfilming. The concept was adopted as a result of this research.

Date	Event
July, 1969	Zone/Telpak System completely operational in all State Farm offices countrywide.
Years 1969 to 1972	Craig Chamberlin served as IBM Marketing Manager for State Farm.
Dec. 8, 1969	Roger Joslin named Vice President and Comptroller of State Farm Mutual and was assigned the responsibility for management of EDP Research and Home Office Data Processing. Marquardt remained Vice President in charge of Service & Systems Department.
Year 1970	IBM announced the new 370 Series computer line.
Mar. 8, 1970	Norman Vincent was assigned the responsibility for the management of EDP Research and Data Processing operations.
June 8, 1970	Adlai H. Rust announced his retirement and was named Chairman of the Board, Emeritus. Richard Stockton was named Chairman of the Board.
Oct. 9, 1970	Administrative Terminal System (ATS) introduced to State Farm by IBM. Later installed.
Dec. 18, 1970	Decision reached to install IBM Type 50 Inscribers (tape input machines) countrywide.
Jan. 18, 1971	Formulated a strategy for placing zip codes into State Farm Mutual policyholder records.
June, 1971	The IBM 1288 Optical Character Reader was initially installed in the West Central Office, Lincoln, Nebraska. Implementation into all offices completed in late 1973.
Mar. 17, 1972	In ALFI NEWS article, E. B. Rust, Sr. called the State Farm return to profitability in 1971 and 1972 as an "astonishing turnaround" after 2 years of very serious losses due to claim frequency and claim severity of enormous proportions.
July 28, 1972	The Data Processing Department moves from TAB Building into new Corporate Headquarters.
Dec. 1, 1972	An IBM System/7 was installed in the Corporate Headquarters as a Security Control System for building and computer security purposes. The System/7 was replaced in October 1990.

Date	Event
Year 1973	Initial financial integration of Fire Co. and Auto Co. began with the transfer of Fire Co. financial operations to Roger Joslin, Auto Company Vice President & Comptroller at that time.
Jan. 3, 1973	DPEO decided to decentralize the Real Time System.
Jan. 19, 1973	The decentralize Real Time System renamed "System Delta".
August 1973	Al Johnson served as IBM's Account Manager to 1990, then as Bloomington Branch Manager, and is currently Bloomington Unit Manager—primarily serving the State Farm account.
Oct., 1973	Elmer Bullard named Assistant Vice President-D. P. Administration.
Year 1974	The Health data processing "Decentralization Proposal" written by Richard Andes initiated the Health decentralization concept which required nearly a decade before the "full blown" decentralization program was officially implemented in June, 1983 and completed in November, 1985.
Jan. 19, 1974	IBM System 370/158 demonstrated for DPEO. Result of that demonstration was to install that computer in all regional offices as the Decentralized Delta System.
June 1, 1974	Indiana was the first regional office converted to the decentralized Delta System.
Dec. 31, 1974	Carl Marquardt, long-time Vice President-Service & Systems Department, retired.
Dec. 31, 1974	Jay Edmondson named Vice President-Service and Systems as the successor to Carl Marquardt.
Year 1975	E. B. Rust, Jr. began his State Farm career.
Year 1975	Hand-held calculators for agents project initiated by Norman Vincent, assisted by Myron Willke.
Feb. 28, 1975	James Hickey, one of the four original members of the EDP Research Unit which founded data processing at State Farm Mutual, retired.
Nov. 18, 1975	Investigation begun on the feasibility of the agent's hand-held calculator for computation of auto policy rates.

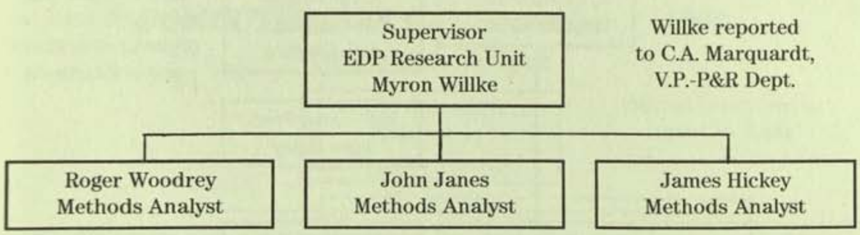
Date	Event
May 1, 1976	All 22 regional offices, except those still on Centralized Delta, had been completely converted to the decentralized Delta System.
Year 1978	The agent's ECHO System was initiated with a 3-phase plan for potential installation into all agents' offices.
Year 1978	Full consolidation of Fire Company fiscal and data processing operations with the Auto Company completed except for MIS operations.
Feb. 28, 1978	Arthur H. Dierkes, Asst. V. P.-Data Processing, retired.
March, 1978	The last of the three Centralized Delta Offices was decentralized into "full Delta."
May 16, 1978	First minicomputer installed in State Farm was placed in the Investment Accounting Department.
July 1, 1978	Ed Shelley, Vice President-Data Processing was named to DPEO (Data Processing Executive Office).
Year 1979	Hewlett Packard was chosen as the vendor for the Interactive Claims Handling System. By the end of 1989, there were 690 HP Systems in the regional offices; 560 remote sites; 23,300 terminals; and, 3450 PC's installed. 872 offices out of 934 were using the Interactive Claims System.
Year 1979	IBM selected as vendor for the agents' ECHO systems after studying merits of nine different vendors.
Mar. 22, 1979	A new SCAT test procedure was initiated for the hiring and training of new data processing employees.
June 11, 1979	Richard Stockton, retired Chairman of the Board of State Farm Mutual, died unexpectedly. Stockton retired in 1977.
Year 1980	MIS operations for the Fire data processing was consolidated with the Auto data processing operations making the consolidation into one Data Processing Department complete.
April 18, 1980	Morris Fuller, retired State Farm Life Co. president, died. Fuller retired in 1961.
December, 1980	Canadian Office converted to the Delta System making the conversion to Delta complete.

Date	Event
Dec. 31, 1980	Myron Willke, founding supervisor of EDP Research (data processing) Unit in 1955, retired after nearly 34 years with State Farm Mutual.
Years 1981 to 1990	State Farm's data processing philosophy was to bring data processing technology and the power of the computer as close as possible to the data processing professionals.
Years 1981 to 1990	Internal Management Team Concept expanded and the Plan II concept fundamentally abandoned.
Years 1981 to 1990	Agents' ECHO system expanded countrywide as was the Interactive Claims System.
April 4, 1981	Carl A. Marquardt, retired Vice President-Service & Systems, died unexpectedly in his home in Florida after a game of golf.
Year 1982	Office Services was established as a integral part of the evolution of Office Automation which became a significant technology during the decade of the 1980's.
August 18, 1985	Edward B. Rust, Sr., President, Chief Executive Officer, and Chairman of the Board, of the State Farm Companies, died. He was succeeded by his son, Edward B. Rust, Jr. as the fifth President and Chief Executive Officer. Today he is also Chairman of the Board.
Decade of the 1980's	Host/Off load concept fully developed during the decade of the 1980's which toward the end of the decade was under further revision.

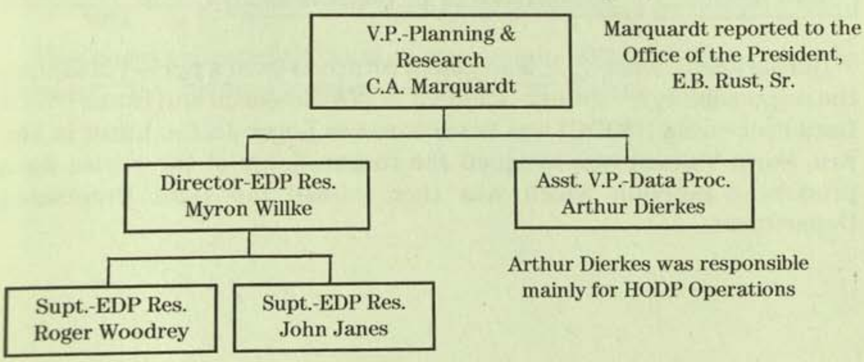
APPENDIX B — *EDP Research & DP Organization Charts*

The number of organization changes within EDP Research and the successor Data Processing Department over the 35 years covered by this book is staggering. Hence, only the principal organization charts depicting the very top level management organizations within the various computer eras are included in the charts shown below. Therefore, only a very few charts are included with occasional references to other individuals directly involved with the management of data processing in State Farm Mutual.

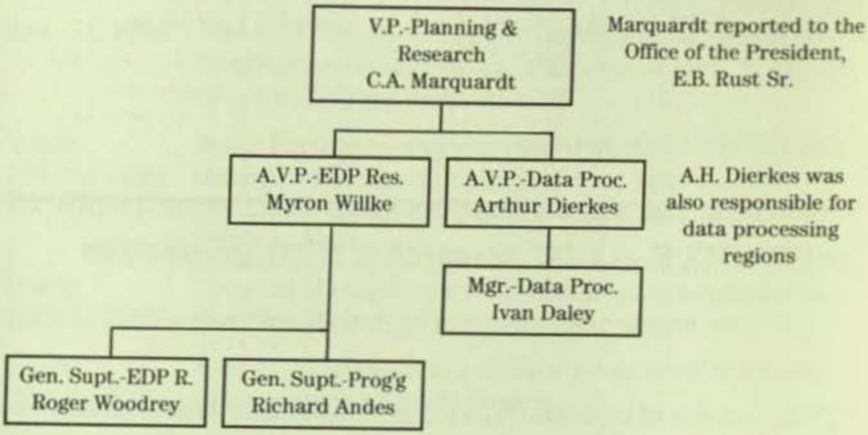
Computer ERA I — January 10, 1955



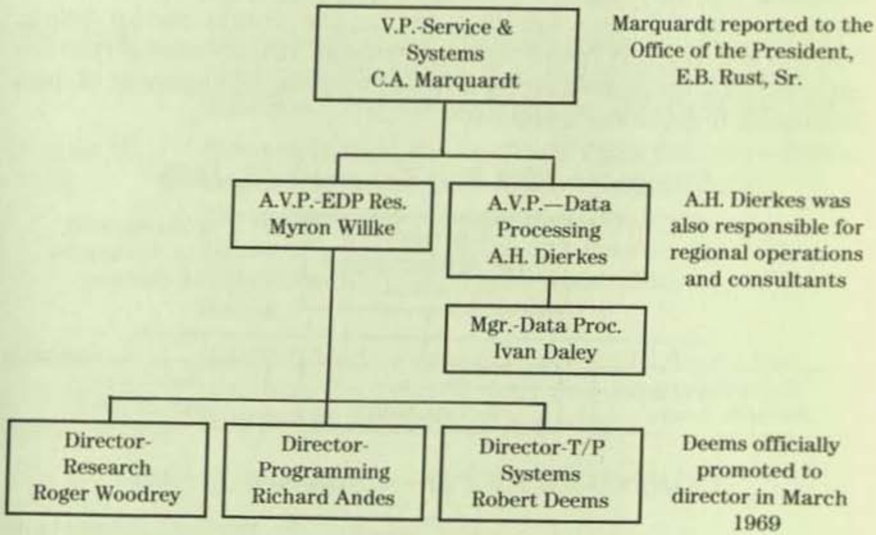
COMPUTER ERA II — January 1, 1962



COMPUTER ERA III — January 1, 1966



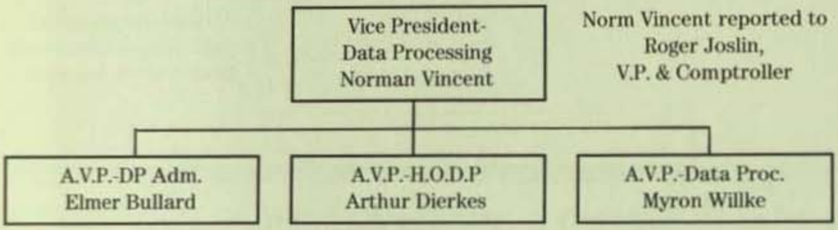
COMPUTER ERA IV — January 1, 1969



During Era IV when C. A. Marquardt returned from a period of illness, the responsibility for the management of EDP Research and Home Office Data Processing (HODC) was transferred to Roger Joslin. Later in the Era, Norm Vincent was assigned the responsibility of the entire data processing function which was then named the Data Processing Department.

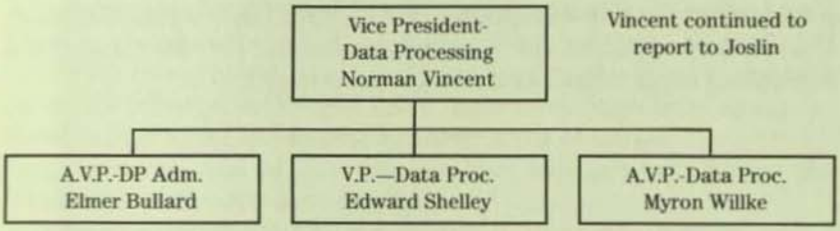
COMPUTER ERA V — August 20, 1973

Data Processing Executive Office (DPEO) Established



COMPUTER ERA V — July 1, 1978

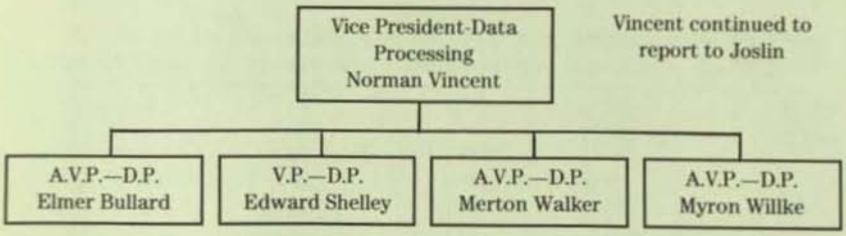
DPEO Reorganized



This chart reflected the first consolidation—Fire and Auto.

COMPUTER ERA V — December 1, 1980

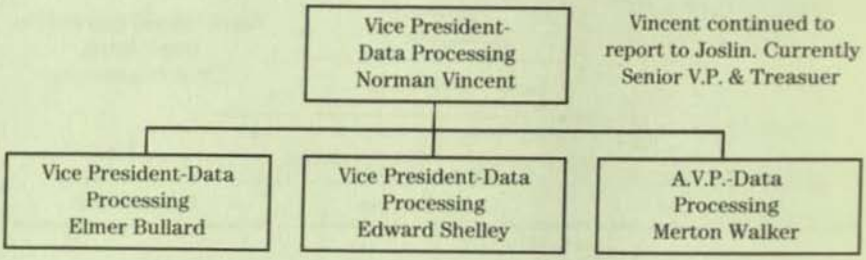
DPEO Reorganized



This chart reflected the final consolidation—Fire and Auto. It also is the last chart before the retirement of Myron Willke.

COMPUTER ERA VI — January 1, 1981

DPEO Reorganized



All charts were intended to show the organization at the beginning or virtually the beginning of each Computer Era for which I had accurate information. The only exceptions were the two charts within Computer Era V which reflected the consolidation of the Fire and Auto Data Processing Departments into a single department.

APPENDIX C — *Growth Statistics — People & Policies*

Realizing the importance many former colleagues might place on the type of statistics which will be included in this appendix, I have taken extraordinary precaution to assure their accuracy. The primary source for these figures is a report published by the State Farm Auto Statistical Department in 1972. Other figures were secured from George Noud, Dennis Kirby, and Ronald Kennedy, all of whom are current State Farm executives, to whom I am indebted, and in whom I have the utmost confidence for accuracy.

The Statistical Department report included figures for every five years from 1922 to 1972. In addition, I have included figures at some of the other significant milestones as identified in this book. The tabular form below did not have space for the Life Insurance In Force and Fire Direct Premium Written amounts. Those figures are available at appropriate places within the book.

Year	No. of Offices	No. of SF Employees	No. of Auto Co. DP(*) Employees	No. of Agents	Auto Policies In Force
1922	1	2*	(**)	(***)	1,339
1925	1	15	(**)	(***)	16,443
1928	2	183	(**)	(***)	(***)
1930	2	375	(**)	(***)	360,115
1935	2	795	(**)	(***)	383,152
1940	3	1,251	(**)	6,608	648,690
1945	3	2,084	(**)	7,573	1,219,142
1950	6	2,868	(**)	6,558	1,810,794
1955	12	6,813	5	7,574	4,049,848
1960	17	11,599	19	8,251	6,176,521
1965	21	16,070	51	10,161	8,890,514
1966	21	(***)	66	(***)	(***)
1970	23	25,123	(***)	10,540	11,976,992
1972	25	25,188	482(*)	11,048	13,373,231
1980	25	31,542	811(*)	14,336	22,104,252

(*) Signifies that regional data processing employees were not included. For the years 1972 and later, the figures include Fire Company data processing employees because of the consolidation.

(**) Data Processing had not been founded until 1955.

(***) Signifies that the information was not available or not readily retrievable.

APPENDIX D — *Data Processing Equipment & Labor Costs*

These figures were obtained from reports prepared by Harry Jahnke, Accounting Operations Manager, and George Eovaldi, Vice President-Accounting. I am deeply indebted to both former colleagues.

I have extracted from those reports figures representing amounts for the years 1955 through 1981 only because they represent the significant years of the respective Computer Eras described in this book. Total labor costs for some years were unavailable. These figures represent *companywide* costs for the Auto Company only until 1972 after which they include Fire Company costs because of the consolidation of the two departments.

Year	Equipment	Labor
1955	$ 789,536	Not Available
1962	$ 3,428,000	" "
1967	$ 9,160,000	" "
1970	$13,290,000	" "
1973	$33,963,000	$14,814,000
1981	$40,475,000	$40,404,000

APPENDIX E — *State Farm Regional Offices*

The information for this appendix was supplied by Ron Kennedy and Al Creasy. Included are the names of the offices, year when opened, and the name of the Regional Auditor, Regional Data Processing Superintendent, or Regional Data Processing Manager in charge when the office was computerized or if built since 1960, the superintendent or manager at the time the office was opened. The name of the state within the parenthesis is the state in which the office is located.

In 1960 the title was changed to Regional Data Processing Superintendent for all individuals placed in charge of the newly formed regional data processing department at that time and for future offices when opened for business until January 1, 1979. On that date, corporate management changed the title of the Data Processing Superintendent to Regional Data Processing Manager.

Name of Regional Office	Year Opened	Regional Auditor, Regional D.P. Supt., or Regional D.P. Manager
Western (California)	1928	Robert Francis
Canada	1938	Jack Littleford
North Central (Minnesota)	1947	Ivan Daley
West Central (Nebraska)	1947	Al Brand
Michigan	1950	Charles Stauffer
Southwestern (Texas)	1951	Darrel Lee
Eastern (Virginia)	1952	Frank Roeske
South Central (Tennessee)	1953	Jim Merrick
Southeastern (Florida)	1954	Rodney Robbins
Southern (Alabama)	1954	Herb Litwiler
Southern California	1955	Robert Bruce
Mid-Atlantic (Pennsylvania)	1956	Steve DiStefano
Missouri/Kansas (Missouri)	1956	Robert Hamilton
Midwest (Illinois)	1957	Ivan Daley
Northwest (Oregon)	1957	Joe Giroux
Ohio	1959	Gordon Holmes
Lake Central (Indiana)	1961	Jerry McAhren

Name of Regional Office	Year Opened	Regional Auditor, Regional D.P. Supt., or Regional D.P. Manager
Northeastern (New Jersey)...........	1961	Sam Barker
Florida.............................	1962	Jack Begley
Mountain States (Colorado)..........	1963	Leon Overbeck
Seaboard (Maryland).................	1965	Ralph Yanike
Mid-South (Louisiana)...............	1968	Robert Franklin
Westlake Village (Calif.)...........	1969	Robert Sauter
Sunland (Arizona)...................	1971	Robert Seath
Texas...............................	1971	James Cross
Oklahoma-Kansas (Oklahoma)..........	1989	James Virtue
Georgia.............................	1991	Ed Davis
North Atlantic (New York)...........	1991	Michael Gifford

APPENDIX F — *History of "EDP OPEN" Golf Tournaments*

The following brief history of the "EDP Open" golf tournaments was assembled by Mike Steach, Charles Cappis, and Wayne Miller to whom I am indebted. I have also included information taken from my daily diary.

The first golf tournament was organized and played at Highland Park in Bloomington, Illinois on July 9, 1966. About 35 individuals participated in this event including some of the IBM marketing and systems personnel. Roger Woodrey had the low score for that first "Golf Day" as we named it.

The first official "EDP OPEN", of which there have been a total of 26 tournaments, was held at the Highland Park golf course on May 20, 1967 and a second tournament that same year at the Clinton Country Club on July 20, 1967. That was the only year when two tournaments were held in the same year.

The tournament has continued unabated and has grown to the extent that not all players desiring to "tee off" can be accommodated. Although I have been given a "lifetime" pass for which I am extremely grateful, I am not sure how those fortunate enough to receive a pass are chosen.

A nominal fee has been charged for each player ranging from merely the course fee for the first "Golf Day" to about $30.50 for the 1991 tournament. This helps fund a very fine lunch after the tournament has concluded as well as many fine golfer-type gifts which are distributed. Many gifts are also contributed by local State Farm agents and other local business establishments. The tournament sponsors are very grateful for this generous support.

With the growth of the tournament, it has been difficult to find golf courses or country clubs willing to close their facilities to accommodate a group of 125 or more players on a Saturday week-end. Hopefully this great tradition can be continued for many more years.

Charles Cappis was the winner of the first EDP OPEN. The following table sets out the tournaments by year, the courses where they were played, and the winner. For some of the early years the exact day within the month when the tournament was held is not known. The complete list of the official "EDP OPEN" tournaments is as follows:

No.	Date Held	Name and Location of Golf Course	Tournament Winner(s)
1	5-20-67	Highland Park	Charles Cappis
2	7-29-67	Clinton C.C.	Jim Weikel/R.Woodrey
3	6-68	Clinton C.C.	W.Hood/H.Hamby/R.Blaesing
4	6-69	Clinton C.C.	Merrill McCall
5	6-70	Farmer City	Jim Sweeney
6	6-71	Fairbury C.C.	Bobby Stewart
7	7-22-72	Clinton C.C.	Merrill McCall
8	7-14-73	Fairbury C.C.	Mike Lynch
9	7-20-74	Fairbury-Ind. Cr.	Jim Defenbaugh
10	8-2-75	Saybrook	J. Bethman (rain-5 holes)
11	7-24-76	Saybrook	Jim Defenbaugh
12	7-16-77	Fairbury	Bob Mitchell
13	7-29-78	Cayuga-Wolf Creek	Jim Defenbaugh
14	7-28-79	Cayuga-Wolf Creek	Jack Burkhart
15	7-19-80	Morton-Pine Lakes	Chris Weikel
16	8-1-81	Morton-Pine Lakes	Jim Weikel
17	7-10-82	Lincoln Elks	Tim Kerfoot
18	8-27-83	Lincoln Elks	Tim Kerfoot
19	7-14-84	Lincoln Elks	T.Kerfoot/Scott Kalbacken
20	8-24-85	Lincoln Elks	David Good/Gary Scheets
21	Unknown-86	Lincoln Elks	Tim Kerfoot
22	Unknown-87	Lincoln Elks	Scott Kalbacken
23	8-6-88	Pekin-Sunset Hills	Tim Kerfoot
24	7-29-89	Washington-Quail	Scott Kalbacken
25	7-14-90	Decatur-Scovil	D.McDowell/S.Kolbacken
26	7-27-91	Secor-Fairlakes	Scott Kalbacken

Note: All listed winners were those with the low gross scores. There were other handicap winners of which no record is available.

APPENDIX G — *Contributors to this Book*

The individuals listed below contributed very important information used in this book. The information was supplied either over the phone, by published report, or by special effort of the examination of their personal files. Included are all levels of current management and employed colleagues, retired colleagues, relatively new employees, IBM personnel, and personal friends. (Much of it was by telephone.)

To all contributors I am extremely grateful and to whom I shall provide an autographed complimentary copy. Hopefully, I have not omitted anyone. I have taken great precautions to include every contributor. My apologies if someone has been inadvertently omitted. There were 194 contributors.

The following is an alphabetical listing of all contributors:

Name	Name	Name
Adam, Cecil	Blair, Prentice	Creasy, Al
Adams, Freda	Blickensderfer, Dee	Crockett, Carole
Allen, Henry	Bower, Marvin	Cushman, Gordon
Allison, David (Smithsonian Inst)	Buchanan, Richard	Daley, Ivan
Andes, Richard	Burns, William	Danahay, James
Arnold, Ron	Busing, Robert	Deems, Robert
Armstrong, Robert	Caines, Richard	Deener, Mel
Ash, Ralph	Callis, Bruce	DeFrance, Lowell
Atterson, James (From CBS News)	Cappis, Charles	Detloff, Jerry
Baley, Richard	Carlson, Gordon	Dooley, Wilma
Barringer, Dan	Carter, Larry	Dornaus, Arthur
Barroux, Jean	Chamberlin, Craig	Drane, Shirley
Bartholomew, Edna	Chambers, John	Elvidge, Paul
Bartrum, Royal	Chapman, Gerald	Eovaldi, George
Bernstein, John	Christensen, Ken	Evans, Ethan
Beaman, Glenn	Clickenbeard, Dick	Fink, Paula
Beyer, Carolyn	Cockrell, William	Frankeberger, G.
Bischoff, Robert	Connor, Victor	Friedli, Lloyd
Bitterman, John	Costigan, Thomas	Furst, Al
	Cottrell, Vere	
	Covey, Harold	

Name
Garrett, Laura
Gentes, Elmo
Gerjets, Roger
Ginther, Weyland
Glenn, Les
Goodman, Bill
Grafton, Merrill
Gray, Lynn
Halsema, Don
Harding, Herman
Harris, Jack
Hartley, Charles
Hewitt, Debby
Hill, Ronald
Hodel, Ron
Hoffman, Ernie
Holland, Robert
Holmes, Herschel
Hudson, Ed
Huffington, Dick
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Woodrey, Roger
Yates, James
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A few of those named above are deceased but I did want to give them credit for their contributions. Members of their families will receive their complimentary books.

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40	Information from a letter to E. B. Rust, Sr., President from James S. Burkhart, CPCU, about the 1975 Loman Foundation Research Project. Any further information is not available because of copyright restrictions.

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116	From a report published by State Farm in 1983—author unknown.
117	Information taken from a report by Elmer Bullard dated 1-30-74.
118	The decision to use PL/1 was made by Myron Willke after consultation with Roger Woodrey and other members of EDP Research.

Reference Number	Information Source
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148	Information supplied by Enid Jones, retired.
149	Information supplied by the Bloomington Public Library as a public service.
150	Information supplied by Richard Andes.
151	Information supplied by Kenneth Reeser.
152	Information supplied by Marvin Bower.
153	Information supplied by Stuart Warrington.
154	Information supplied by Cecil Adam.
155	Permission to quote from the Data Management Magazine was received from Hugh Donlan, editor of DPMA Publications on 1/13/93.

Index

Myron G. Willke, retired, had extensive experience with the design and manufacture of electronic equipment with the Radio Corporation of America (RCA), both in Camden, New Jersey and Indianapolis, Indiana. Hired by RCA as an industrial engineer after graduation from the University of Illinois with several scholastic honors including Beta Gamma Sigma (equivalent to Phi Beta Kappa). Upon graduation, he was qualified both as an Industrial Engineer and an Accountant.

Later, for reasons of health, resigned from RCA and became involved in national and international grain operations as well as at the consumer level before joining State Farm. At State Farm Mutual, during a nearly thirty-four year career, he moved steadily through the ranks of a number of pioneering endeavors including the early days of the establishment of the Planning and Research Department which was responsible for many of the organized corporate procedures and the surveillance of those procedures. His foremost pioneering effort was the computer experimentation which led to the establishment of Electronics Data Processing Research which was the forerunner of the current Data Processing Department.

Willke retired in 1980 as an executive partner of the Data Processing Executive Office of the State Farm Mutual Insurance Company. He is married to the former Freda Fern Payne of Council, North Carolina. They have three children and seven grandchildren.

This book spans a computer technology period at State Farm Mutual which encompassed the IBM Type 604 Electronic Calculator pictured below installed during the year 1955 to the sophisticated Corporate Control Center pictured on the front page in use today.

The IBM 604 Electronic Calculator (officially named the 604 Calculating Punch) was an electronic calculator not an electronic computer. Its input device was an IBM Card Reader and its ouput device an IBM Card Punch. In State Farm, it was replaced in 1956 with the IBM 650 Magnetic Drum Calculator. The 650 Computer, having both the attributes of an electronic calculator and electronic computer, helped bridge the gap from calculator to a fully electronic computer of future years.

The Corporate Control Center in operation today, pictured on the front page, monitors, with some exceptions, the complete corporate computer system and teleprocessing network.

This center is in operation on a 24-hour basis and on a 7-day continuous cycle. It is manned by 4 or 5 operators on each of 3 shifts making up the 24-hour round-the-clock operation.

Among the tasks monitored are software testing and production jobs as well as teleprocessing networks extending countrywide to State Farm's Regional Offices across the U.S.A. and Canada. Controlled by this set of many video monitors are all state Farm Mutual and Fire Company major computers including the very powerful IBM 3090 Model 720 computers. Basically, the only operators not performing their tasks within this control center are the operators handling the physical aspects such as those supplying paper for the printers, and handling magnetic tape cassettes, and similar tasks.

The two pictures on the front and back covers therefore represent the earliest and latest computer technology utilized by State Farm Mutual.