the

dissatisfied

man

In the beginning,
Homo sapiens was dissatisfied.

He sought a way to record and preserve his impressions of the world about him. And to document his victories against a hostile environment. His solution was simple, but it inspired his species to look beyond the cave and wonder about the stars.

About 1500 B.C., some neolithic geniuses were dissatisfied.

In order to determine the best times to plant and harvest the crops, a means was required to accurately compute the arrival of the summer and winter solstices. And if they could also awe the people with precise predictions of coming eclipses, who would dare to question their mystical powers? So, it is believed, they erected Stonehenge . . . the largest, most famous computer in the history of man.

Paleolithic drawing of a bison from Niaux, Ariege, France.

In 600 B.C.,
someone in China was dissatisfied.

Disgusted by the limitations of counting with fingers, pebbles or sticks, he put his imagination to work. Then discovered the *abacus* — the first known mechanical computing aid. A few centuries later, other dissatisfied men in other countries duplicated the important discovery. And the abacus appeared throughout the civilized world.

In 1617,
Baron Napier was dissatisfied.

He thought he could improve upon the mathematical devices of the day. So he created an ingenious do-it-yourself computer. A set of ivory rods inscribed with a special arrangement of the multiplication tables. With these, you could go from a problem to a square root faster than the human mind had ever gone before.

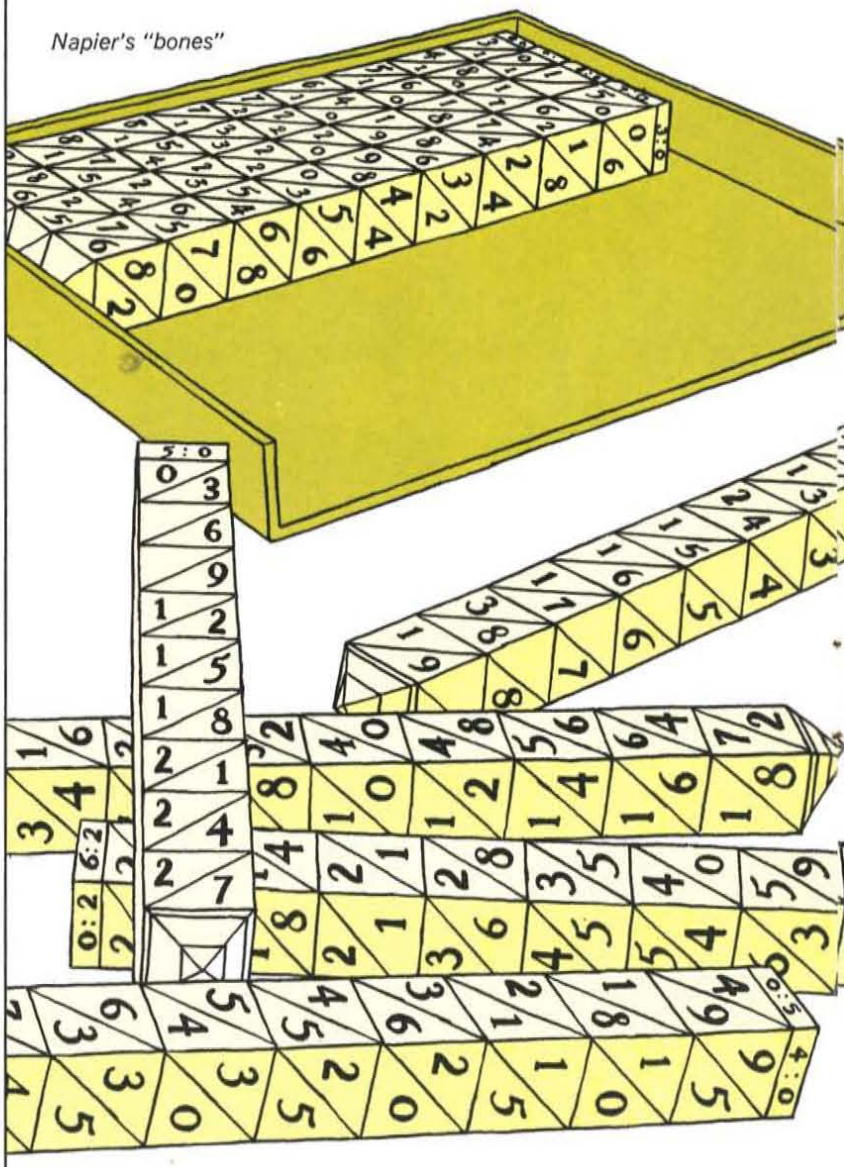
In 1709, Giovanni Poleni
was dissatisfied.

He had the wild idea that if he combined a clock weight with a number of wheels and gears it would be possible to invent an automatic calculator. So he constructed a rather remarkable machine. By winding it up, you could automatically compute the four fundamental arithmetic operations to three figures.

In 1812, Charles Babbage
was dissatisfied.

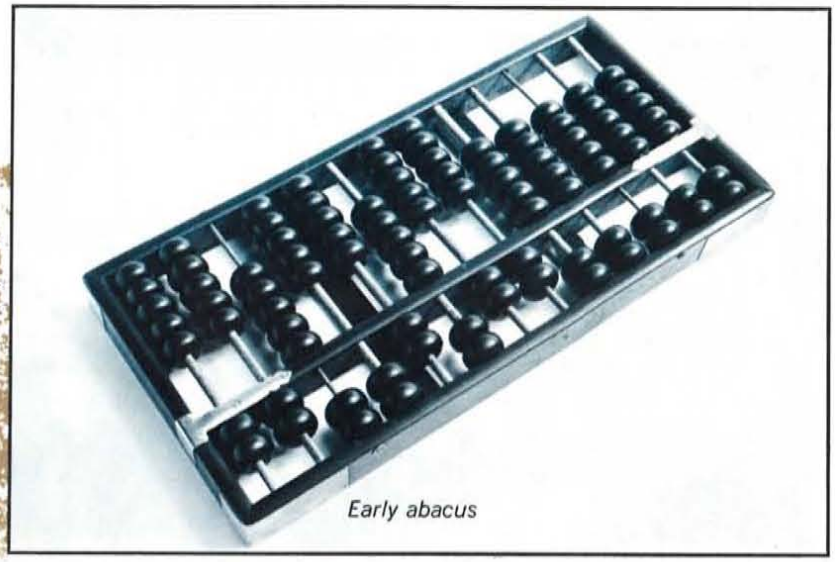
He imagined he could build a machine that would automatically solve lengthy and complex mathematical problems. So he conceived the idea of a steam-driven analytical computer. All instructions and data would be coded on *punched cards* which, when fed into the machine, would produce the necessary computations in the specified order. However, his idea was too far ahead of his time.

It wasn't until 1886 that Herman Hollerith, with Babbage's research and a newer technology, was able to present the world with the first functional punched-card computer.

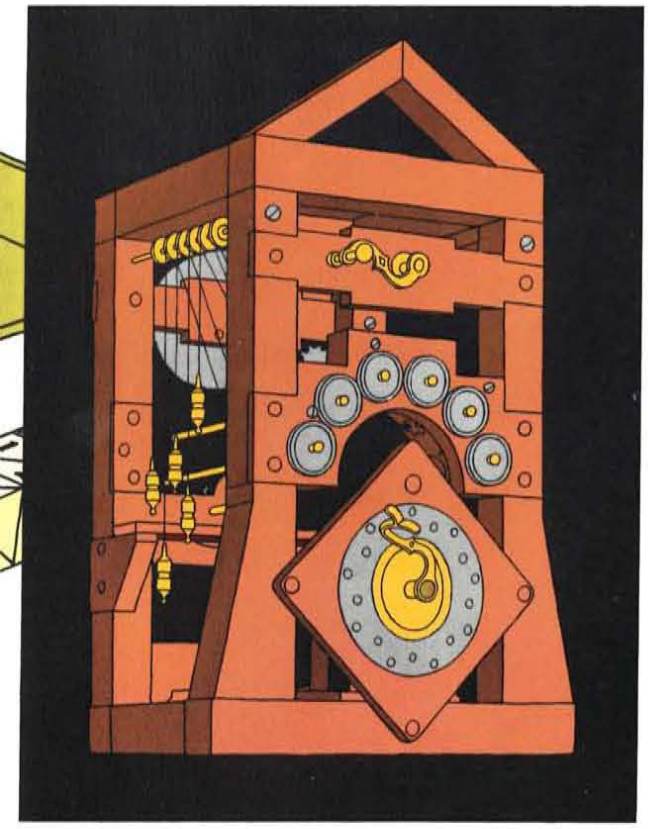


Napier's "bones"

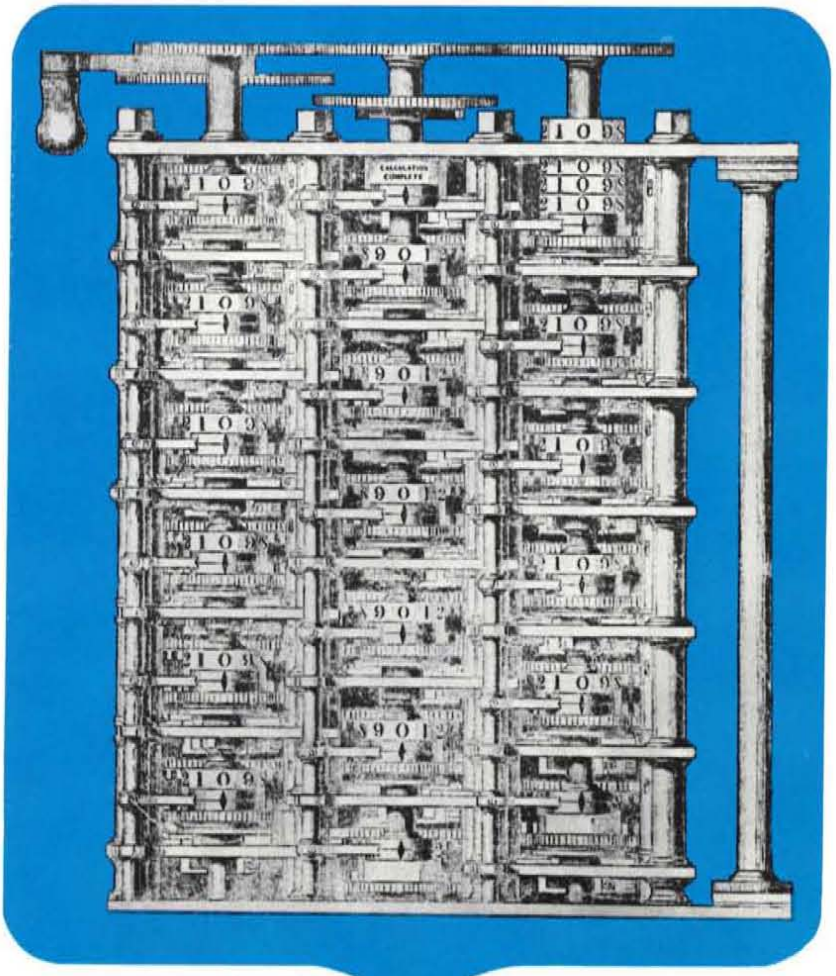
Stonehenge



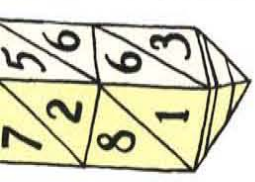
Early abacus



Poleni's calculator



The Babbage Concept



In 1937, three Americans were dissatisfied.

Sigurd Varian, Russell Varian and William Hansen became concerned about the growing threat of Hitler's air might. Particularly since there was no known defense against aircraft that might attack in bad weather or at night.

They believed that if a way could be found to generate radio waves in the microwave region, an efficient all-weather detection device was possible.

Ten months later they had the answer: an improbable looking device of glass and metal called the KLYSTRON. Bulky and temperamental, it seemed determined to resist their efforts to perfect it.

Fortunately their persistency prevailed. And the Klystron tube became a significant factor in changing the course of the war. It let radar (which the British had discovered) become airborne. And it tracked down the enemy beneath the sea.

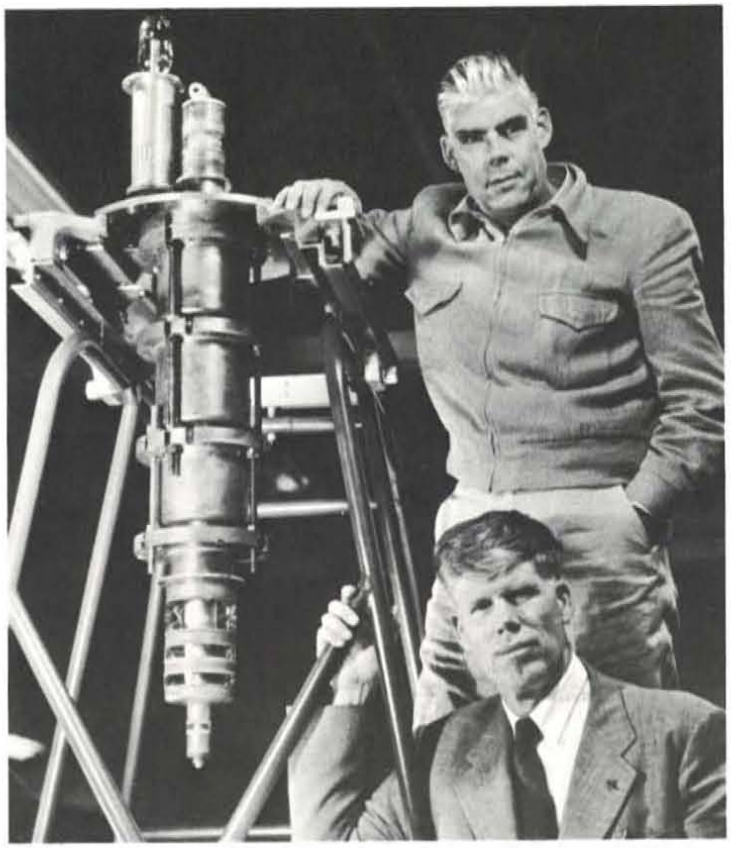
When the war was over, there seemed to be little need for the Klystron. But that aggressive little tube had done too much to be ignored.

In 1948, the Varian brothers and four others formed Varian Associates. Their major objective: manufacture and sell Klystron tubes and other products. Their total working capital: only $22,000.

The government had not forgotten the Klystron and was prepared to buy. Today, Varian Associates has grown from six people to over 10,000 people. And the $22,000 gamble has become a $200,000,000 business.

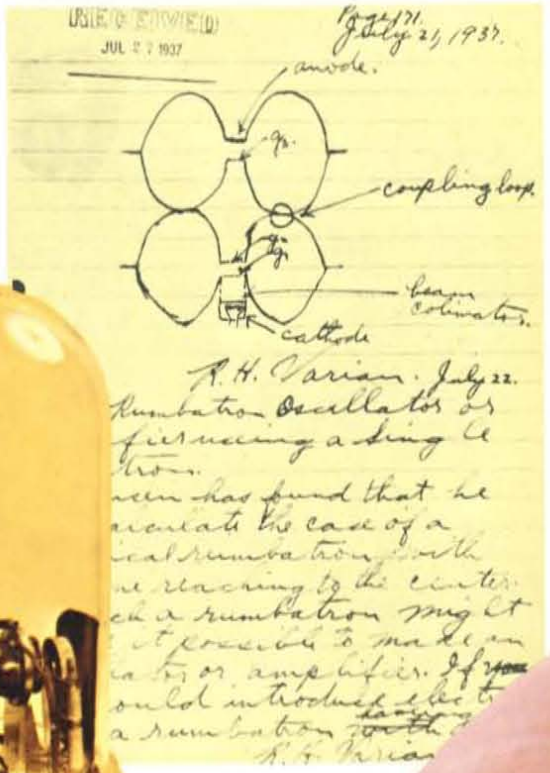
Who uses all those Klystron tubes? Just about every branch of radar and communications. The Klystron plays an essential role in telephone, television and data transmission, aviation, navigation and communications satellite programs.

However, the Klystron has become only a part of the Varian story. The company now produces thousands of different products, ranging from minute solid state devices to highly sophisticated instruments. And it has manufacturing facilities in 9 countries, with sales offices throughout the world.



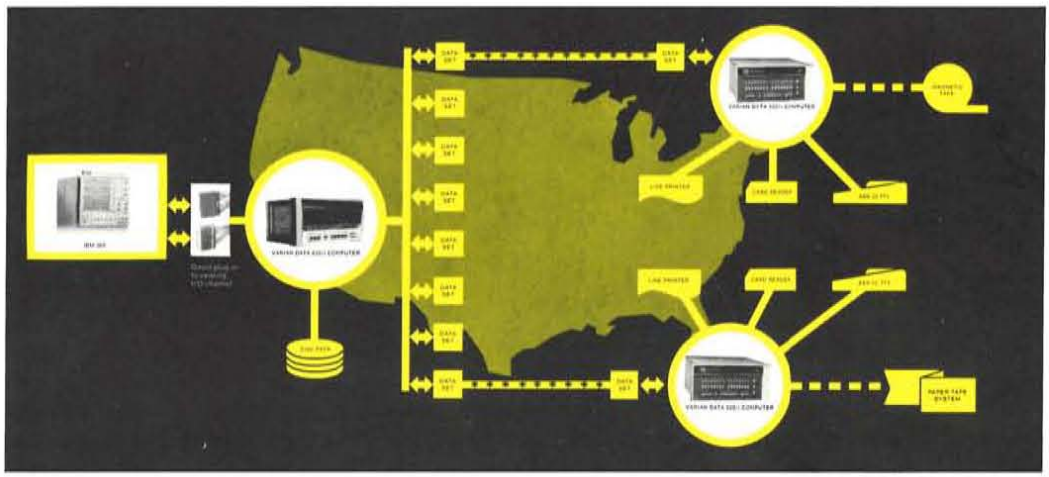
Sigurd (standing) and Russell Varian with Klystron

Entry from Russell Varian's notebook— July 21, 1937



Model "B" Klystron, now in Smithsonian Institution

Varian Data 520/i (1968)



Network 560 (1969)

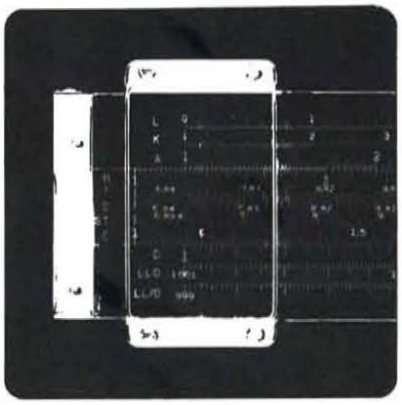
Varian Data Machines, Irvine, California

Research and development, the most dissatisfied men of all.

How can we make it better? What new technologies are on the horizon? Must we be satisfied with the present state of the art?

In less than a decade, the Varian Data Machines organization progressed from logic modules and packaged core memories to the Varian Data 620, a discrete-component computer, to the 620/i with its integrated circuits, to the 520/i with its sophisticated use of plug-in IC modules.

At each step of the way, the Varian research and development organization has made innovating contributions to the whole of computer technology. The fast pace of computer development requires the ability to look ahead in terms of decades. The computers of the 1980's are being conceived today. Their form represents the sum of our present knowledge of computer technology and its potential applications.

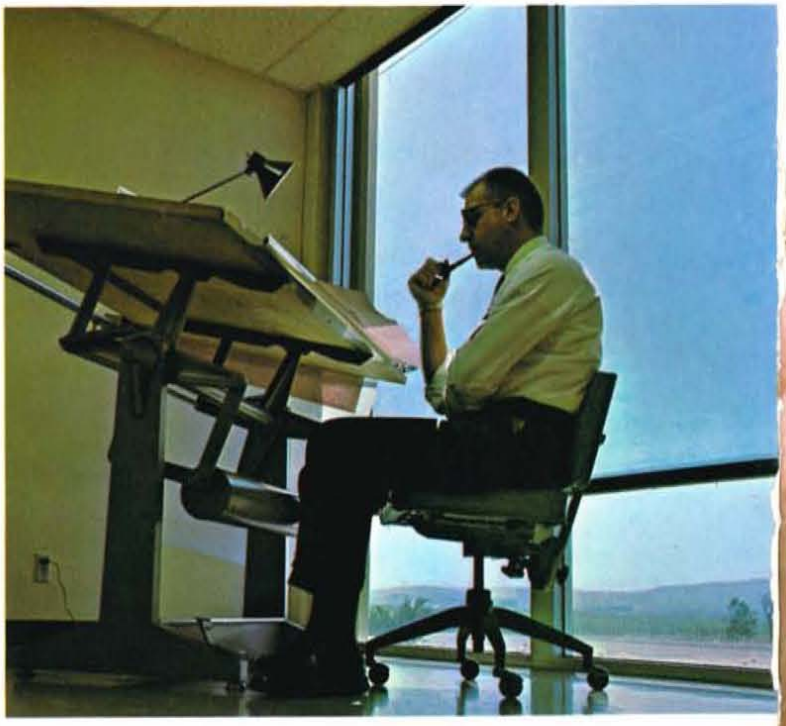


The research and development group within Varian Data Machines is organized into three Development Enginering sections.

Computer Development is concerned with systems analysis, logic design, peripheral interfacing and computer checkout techniques.

Mechanical Design is responsible for all mechanical requirements, structural and sub-assembly design, thermal analysis and automated design and assembly techniques.

Memory and Circuit Development deals with memory—system analysis, design and storage techniques, logic and digital-circuit design and evaluation of new components.



Research & Development

**Engineering and programming,
converting ideas to reality,
but still dissatisfied.
How can we make it better?**

Three engineering and two programming groups within Varian Data Machines are the interface between R&D and working hardware.

Systems Engineering converts standard products into systems that will perform the exact functions required by the user. The group designs and tests the systems, provides all necessary liaison with the user to make sure that the purchase specifications are being met, supports the Customer Service Department with technical data on special interface devices and maintains contact with the user to solve design problems that might develop in the field.

System Integration and Test is responsible for the testing of all peripheral devices and controllers that are to be integrated into a system. It makes sure that these

are both mechanically and electrically compatible, develops the special tests required for system checkout and notifies Development Engineering if it detects any existing or potential electro-mechanical design problems.

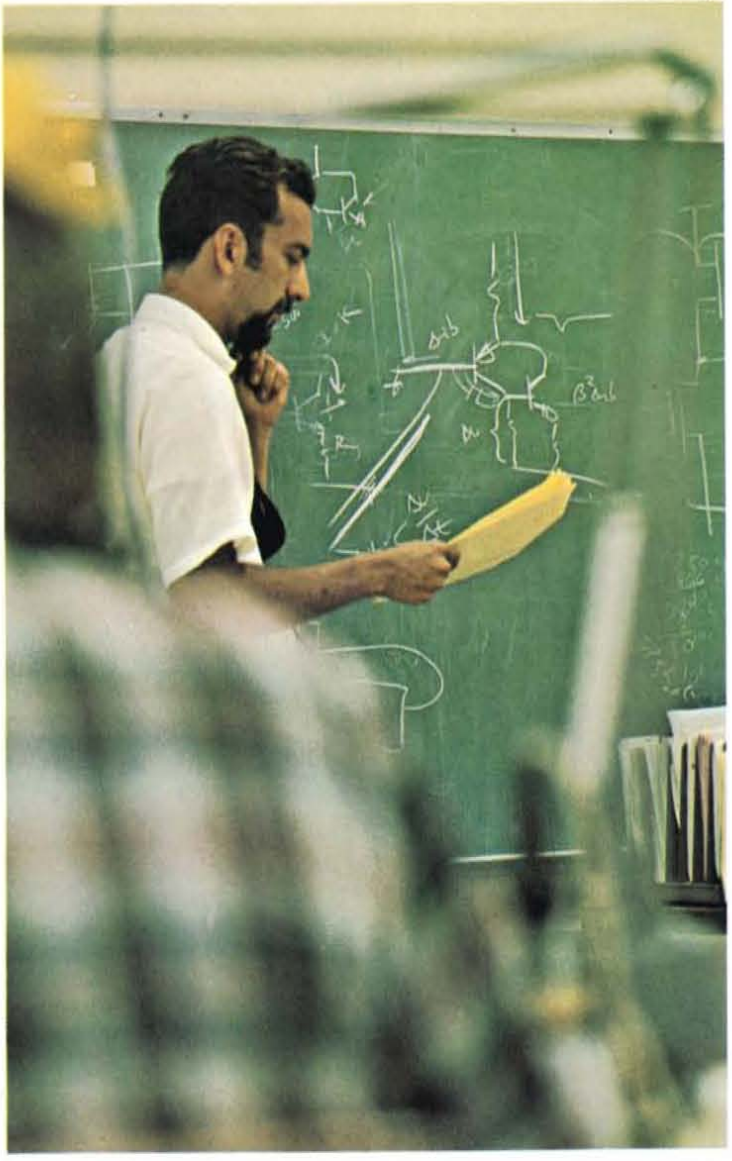
Product Engineering participates in the design of all new products and provides continuing engineering support to Manufacturing, Field Service and users in the field.

Applications Programming analyzes and creates detail specifications and programs, provides research in the area of unique applications, participates in the development of new products and contributes programming support to the user.

Systems Programming provides system research and analysis, creates detailed specifications and programs for such systems, lends technical support and contributes to the design of new computers under development.

Publications and documentation

Circuit design



Software development

Computer testing

Drafting

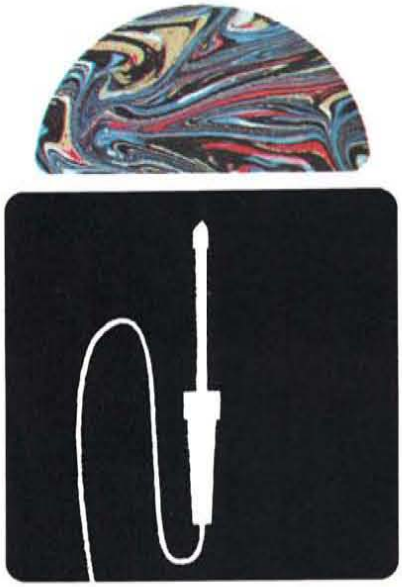
Manufacturing and quality control, the final climatic step in the production of a precision product.

Here, too, are people inherently dissatisfied with the status quo, constantly intent on finding a better solution to every problem.

Production Control analyzes and determines material requirements, maintains an inventory of components and in-process material, and assumes all shipping, stores and receiving control functions.

Production Testing trains and supervises test personnel, prepares test procedures, tests all standard products to make certain that they meet specifications and notifies Engineering of any operational problems that develop during the testing process.

Assembly trains and supervises all personnel directly involved in production and assembly, maintains detailed work and cost records and contributes to the development of techniques for reducing assembly costs.



Industrial Engineering prepares assembly labor estimates, develops standards and methods, specifies assembly tool designs and evaluates and selects all manufacturing equipment.

Quality Control is a separate entity, reporting directly to corporate management. To maintain complete control over the entire production process, the group is divided into three sections:

Receiving Inspection examines all incoming materials for conformance to purchase specifications, performs qualification testing and maintains Vendor Quality performance records.

In-Process Inspection verifies correctness of assembly, workmanship and conformance to documented prints.

Final Inspection assures that the completed equipment meets the specifications of both the user and Varian Data Machines.

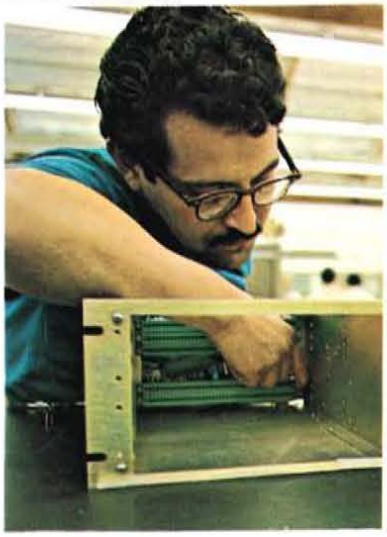
Customer Service

As Varian has grown, its service offices have spread throughout the world. Staffed by highly trained experts, those offices assure Varian's customers of prompt, on-the-spot service and continued maintenance. For we still believe that there is more to a reputation than a printed guarantee.

Environmental test

Parts and Component Service

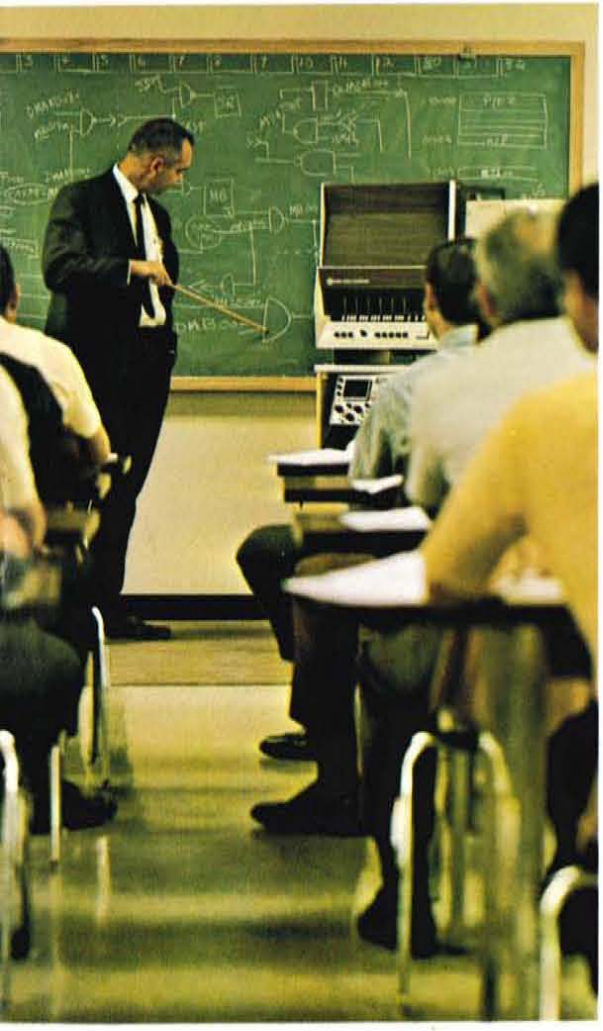
VersaSTORE core memory chassis assembly



Memory production

Computer assembly

Automatic wire wrapping of central processing unit



Customer programming and maintenance training

Circuit board assembly

Epilog and analog

Varian has come a long way since the invention of the Klystron. However, the people who comprise its vast resources today, share one thing in common with those who started it all. A stubborn refusal to accept any accomplishment as conclusive.

What will Homo sapiens discover tomorrow?

No one knows.

But one thing is reasonably certain. As long as there is a puzzle to solve or an unknown to conquer — there will be a dissatisfied man.

LITHO IN U.S.A.

varian data machines

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