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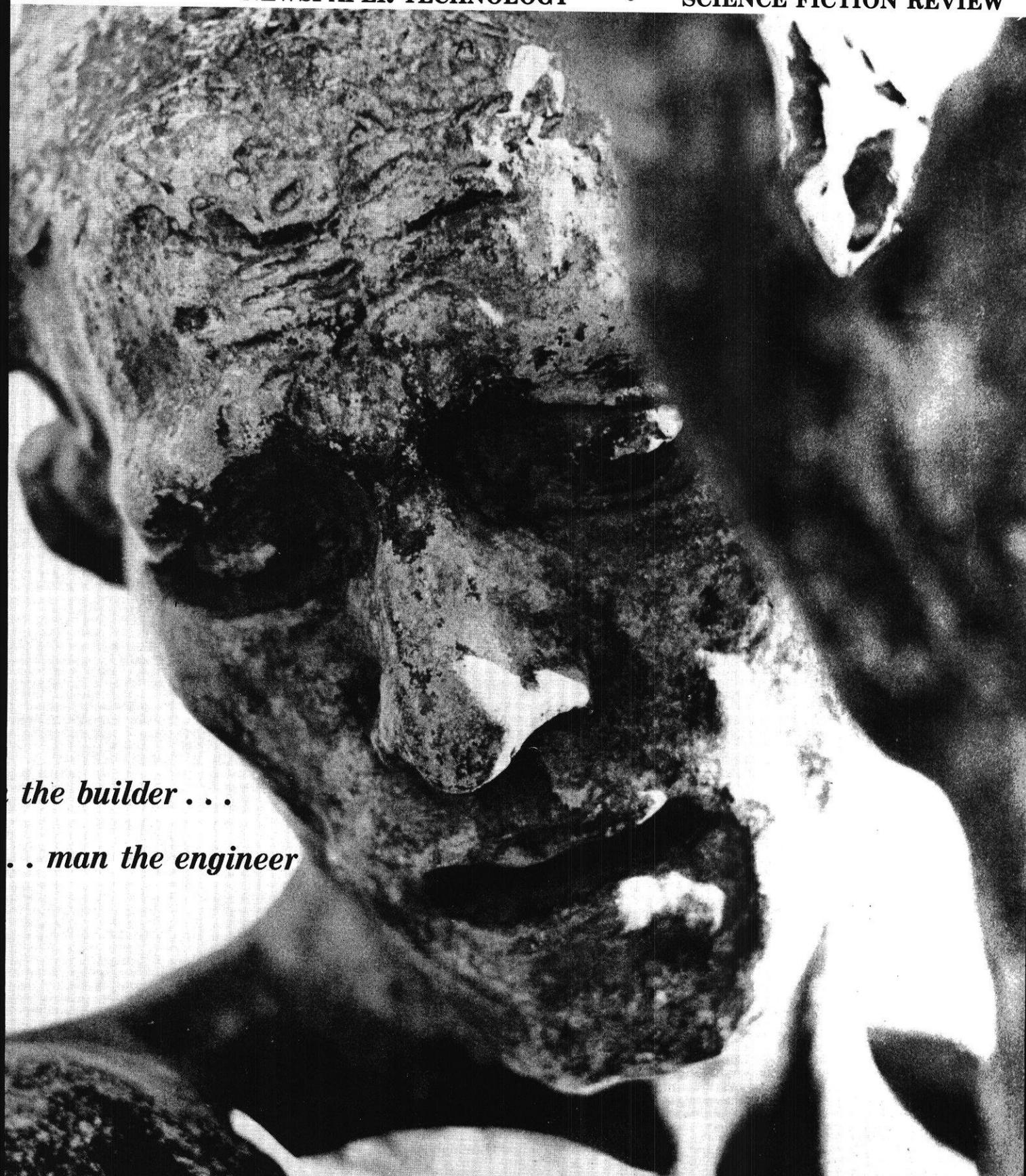
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PYRAMIDS

• NEWSPAPER TECHNOLOGY

• SCIENCE FICTION REVIEW



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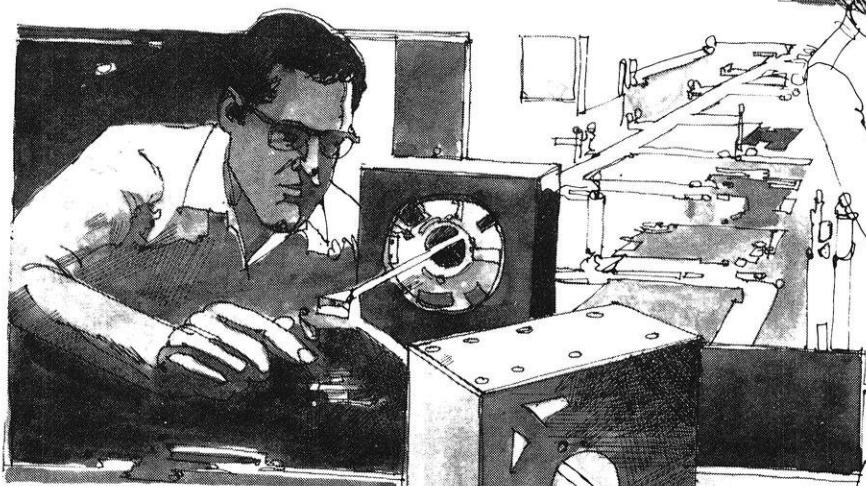
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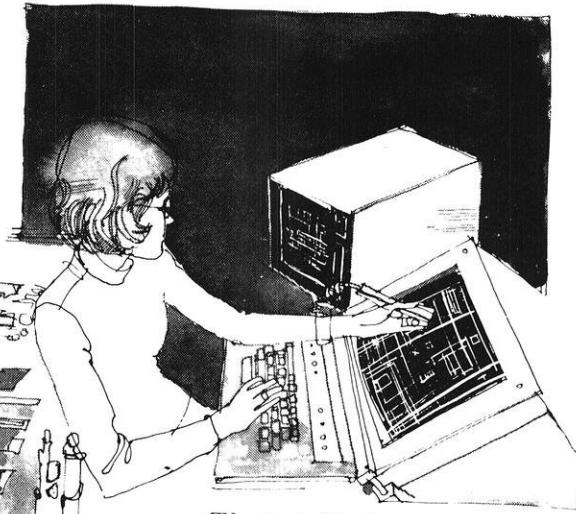
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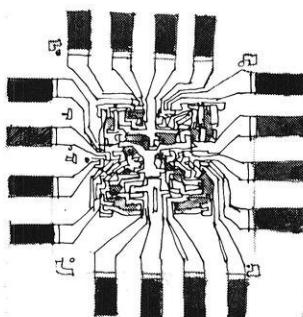
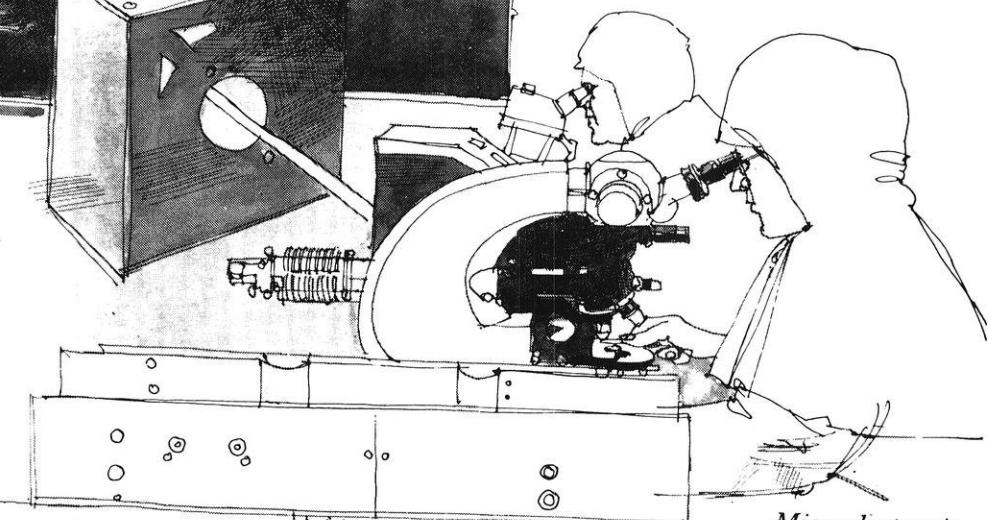
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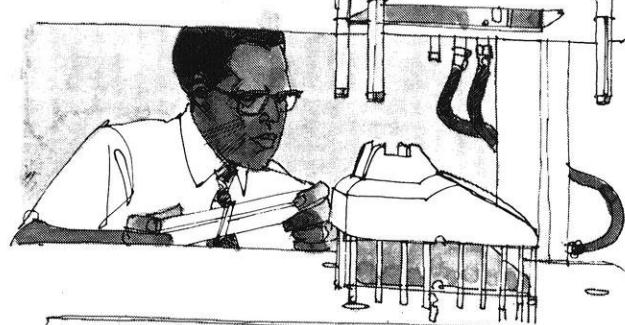
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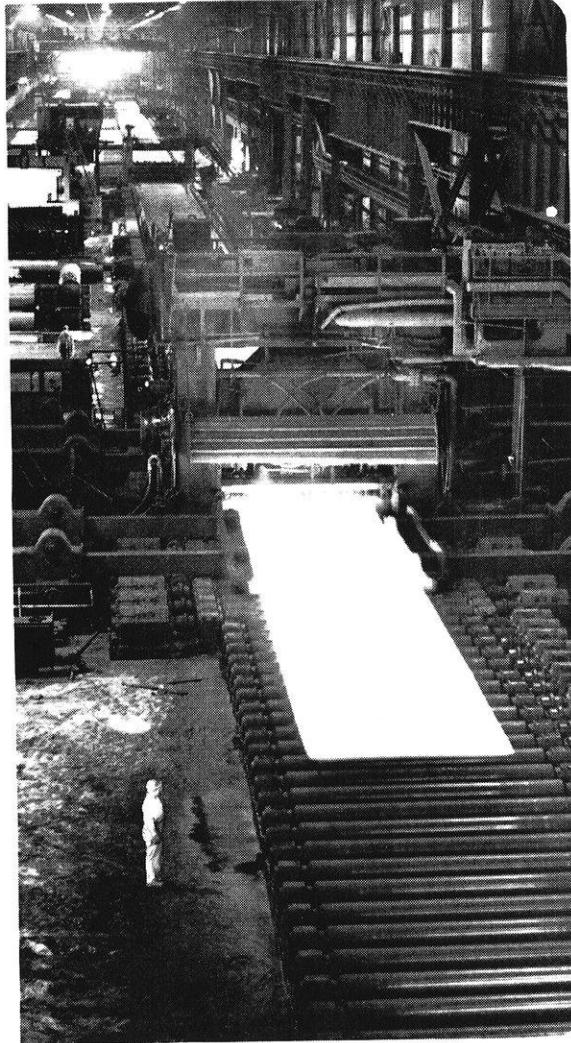
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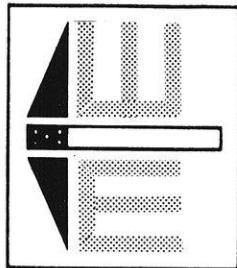
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wisconsin engineer

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*Cover photo by Doug Hearth Detail of Rodin's "The Buglers of Calais," Hirshhorn Museum, Washington D.C.

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The socio-technical engineer

Engineering students, practicing engineers, and the engineering profession are encountering their greatest opportunities of this century. The remaining decades of the 20th Century will offer more challenges and satisfactions from problem solutions to engineers than any prior period. Strange as it may seem, the challenges will stem from society's growing distrust of engineering and technology. Today society continues to believe that the problems of energy and the environment have been caused by engineering, the profession which has been the ingenious discoverer of radio, television, jet transportation, chemical process plants, nuclear energy, satellite remote sensing, biomedical engineering, etc. And indeed the engineers did develop these benefits for mankind. It is distressing to contemplate that the critics of engineering are not better informed about what engineers do, and what the social benefits of engineering have been.

The problem of society's lack of understanding of technology has become a matter of great concern to engineering educators. In fact, it could be the greatest problem facing the engineering profession during the last decades of this century. In this connection, our College of Engineering is endeavoring to take a leadership role in providing education for engineering students and non-engineering students about the complex relations between society and technology. The College of Engineering program, under a Sloan Foundation Grant, has developed new interactions and understanding among engineering faculty and social science faculty. This will result in new courses in the College which will enhance the educational and career opportunities of engineering students in the next decade.

In addition to the new educational directions being developed under the Sloan Grant, several departments of the College



Dean

W. Robert

Marshall

of Engineering are teaching an increasing number of university students outside of the College. As an example, a course for non-engineers entitled "Introduction to Materials Science" attracts on the order of 150 non-engineering students from many departments outside of engineering. Art students are filling our classes in welding; courses dealing with energy and the environment are providing an understanding of the important relationships between these two areas with enrollments coming from English majors, journalists, political scientists, etc. Equally important, our own graduates from engineering are moving into nontraditional career areas for engineers. For example, one of our graduates has been working with the Wisconsin Legislative Council during the past several months and has made valuable technical contributions. Other graduates are entering the medical and health care field, where engineering can be applied to the improvement of health care and the rehabilitation and saving of lives. The Cerebral Palsy Communication Group in the College of Engineering is a direct out-

growth of the efforts of engineering students to assist the unfortunate victims of this disorder. Finally, the faculty of the College are involved in participating in public hearings and in the presentation of short courses and continuing education programs for the benefit of the public and for engineers in practice.

This is a very incomplete recitation of the extensive new directions which the College of Engineering has been taking over the past four years. It omits extensive reference to our leadership role in the education of minority students and the growing attraction of engineering as a career for women. However, it seems appropriate at this time to provide the reader of the *Wisconsin Engineer* with some evidence of the new social and technological directions of our College of Engineering.

It is fitting to conclude by noting that our College has been ranked eighth among the top ten Engineering Colleges of the United States. I congratulate our faculty and staff, and especially our students.





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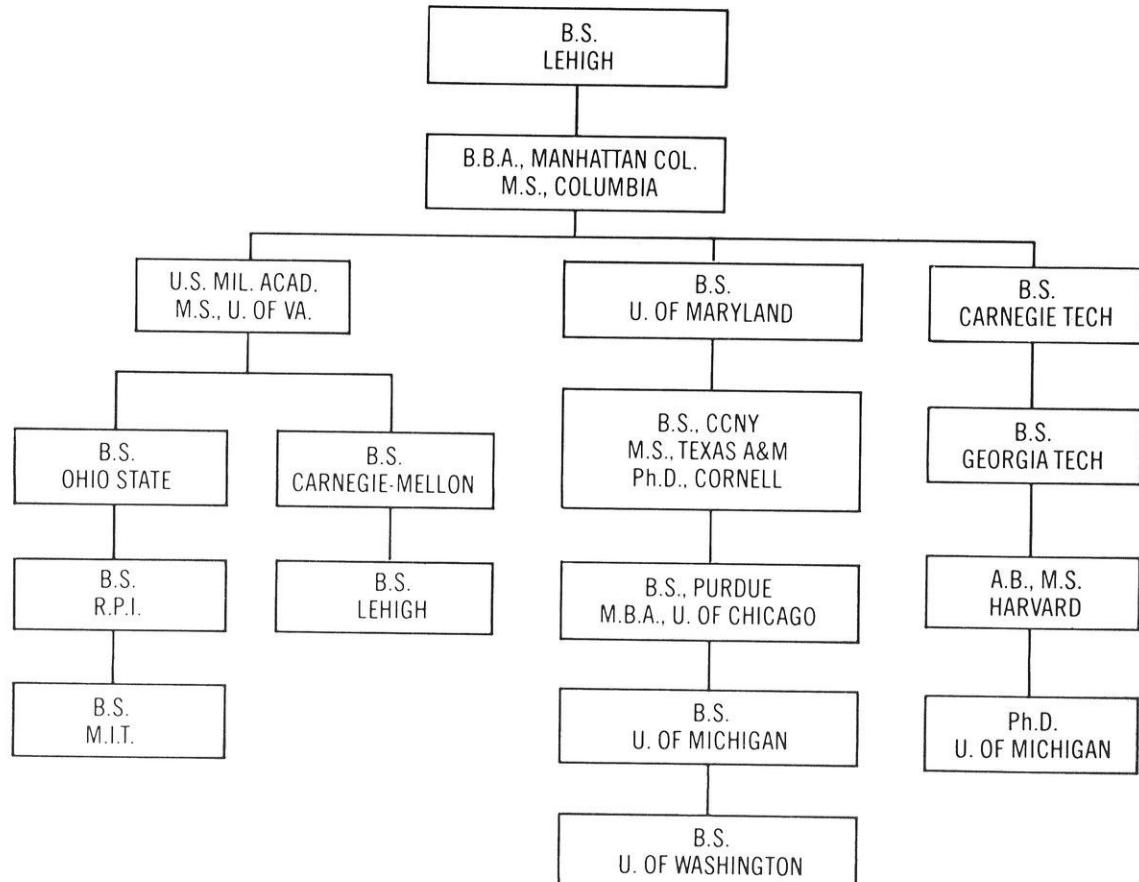
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PYRAMIDOLOGY

by Glenn Russel
of the Engineer Staff

"Religious initiate lies in a sarcophagus as his spirit flies through the spiritual spheres of space."



Although pyramids may be found in several places throughout the world, including Central America and Britain, the most famous and by far the most studied pyramids are found in the northern Nile River Valley of Egypt. The enigmatic nature of these structures has drawn men to explore and study them for many centuries. Are these pyramids tombs, or observatories, or temples? Or are the pyramids a sort of time capsule made by a highly advanced civilization containing the secrets of the universe?

To answer such questions, pyramidologists have turned to one pyramid in particular, the Great Pyramid of Cheops. From base to tip, it measures 485 feet. It is the largest of the six pyramid Giza Complex located on a rocky plateau ten miles west of modern day Cairo. It is built of 2,300,000 stones weighing roughly two-and-one-half tons each. The exact method used to raise these massive blocks into place is not known. However, it is speculated that the builders used relatively advanced construction techniques making extensive use of levers and pulleys.

No records as to the exact date or length of construction survive, but the Great Pyramid was probably constructed over 4,000 years ago and took 20 years to build. Many thousands of laborers, probably slaves, were required for such a task. In its prime the pyramid was covered with a highly polished mantle of limestone which could be seen for many miles. The casing stones of this mantle were worked to within one one-hundredth inch of perfect, so perfect that the thinnest piece of paper could not be introduced into the crack between two stones. It was not until recent times that such accuracy could be duplicated. This mantle was destroyed in the 800's when Arabs removed it in order to rebuild cities destroyed in an earthquake. It is in this rough condition that

the pyramids have remained up to our present time.

For many years men have thought that the measurements of the earth were somehow incorporated into the Great Pyramid. Mathematicians such as Isaac Newton have tried to relate the unit measure of the pyramid to the measure of one degree on the earth's surface. Although inaccurate measurements of the pyramid's dimensions have hindered the work, some interesting coincidences have recently come to light.

It is now known that the Great Pyramid is a rendition of the northern hemisphere, oriented to true north, with each spherical quadrant projected onto a flat triangle. The base of the pyramid corresponds to the equator and the

system of measures based on the degrees of the earth. The pyramid is so accurate that it even incorporates the phenomenon that a degree of latitude is shortest near the equator and longest near the pole.

The results of such an accurate system of measurements would have been very detailed maps to set boundaries or facilitate exploration if the Egyptians so desired. This suggests a possible relationship between all the pyramids in Egypt, being part of some elaborate mapping system. Able to be seen from afar, they would make excellent reference points for surveyors to set boundaries with. As one may notice, this measuring system is related to a temporal system in that it is based on the polar axis of the planet



The great pyramid of Cheops located at Giza.

top corresponds to the North Pole. For this to be possible, there must exist a π relationship between the base and the height of the pyramid. This is the oldest recording of π known to man.

In order to transfer such a spherical surface into a flat one, the famous Golden Section constant was also used. The Greeks were later to make use of this constant in their architecture as well. The pyramids, then, incorporate a

around which it rotates every day.

The builders of the Great Pyramid apparently realized this and incorporated many temporal relationships into the structure. For example, the perimeter, measured from corner to corner, of the base equals 36,524 pyramid inches which is the exact length of a solar year, 365.24 days. It was also found that the sides of the pyramid are slightly concave in-

Pictures on pages 7, 9, and 10 courtesy of **Secrets of the Great Pyramid** (c) 1971 by Peter Tompkins. Reprinted by permission of Harper & Row, Publishers, Inc.

ward. It was then postulated that not only the solar year was recorded in the perimeter, but also the sidereal year and anomalistic year, if you take the inward curve into account when measuring the perimeter. A sidereal year is the time it takes for a star to show in the same place in the sky and an anomalistic year is the time required for the earth to make a complete revolution around the sun and return to the same point in its orbit. The figures for these year measurements are slightly different than the solar year, which is the time between two successive equinoxes.

Also, the sums of the diagonals for the various levels or "steps" of the pyramid give a good average for the length of the great year, which is the time it takes the earth to make a complete gyration in wobble of its axis in relation to the plane of its orbit.

Not only does the pyramid have temporal measurements recorded into it, but it also acts as a good calender which can be consulted

from day to day. It acts as a sort of sundial, using the shadow cast on a paved area north of the pyramid. The paving stones were laid in such a fashion that they recorded the temporal divisions of the year.

"For many years men have thought that the measurements of the earth were somehow incorporated into the Great Pyramid."

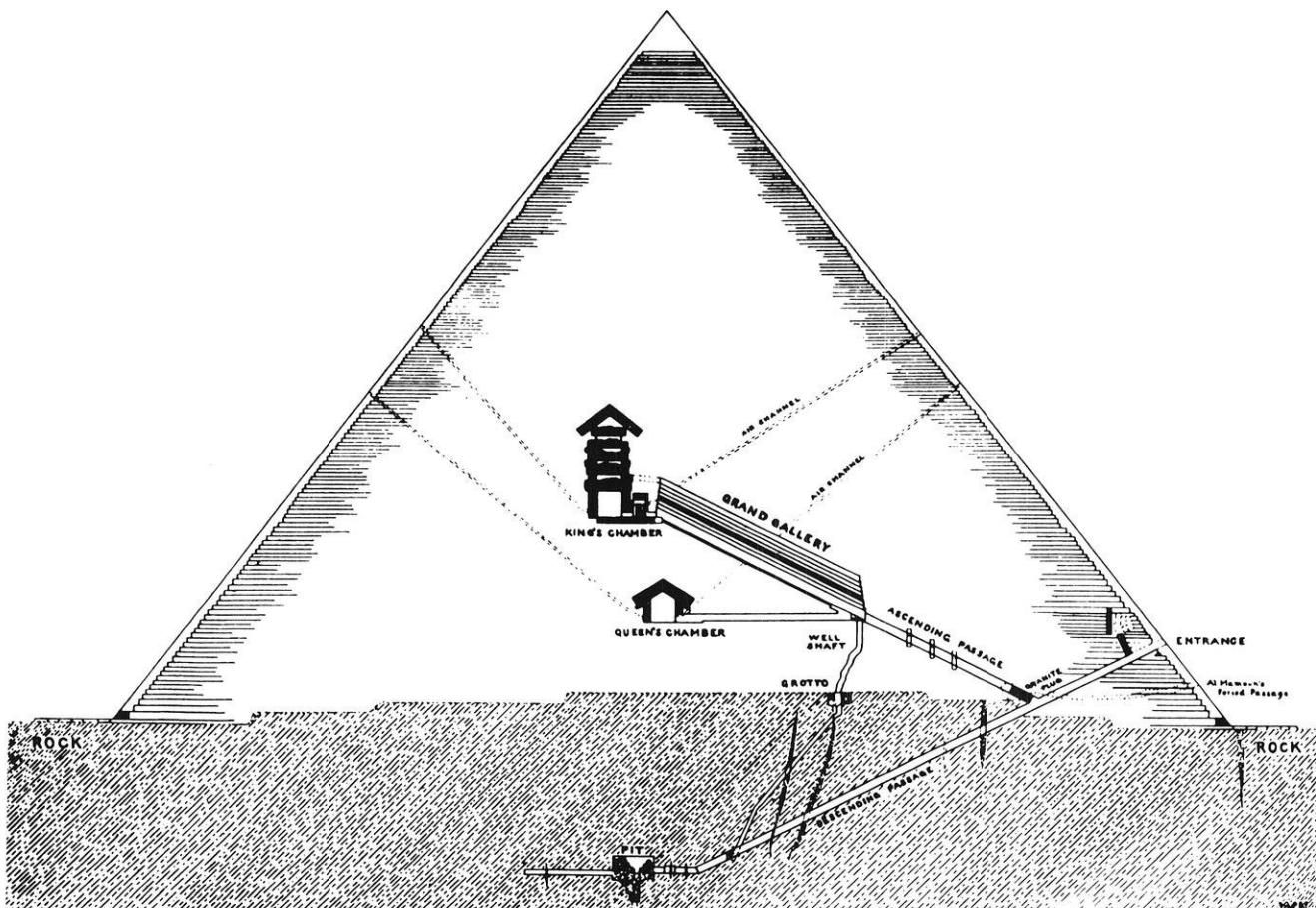
equinox, the mid point between the shadow casting and reflection casting parts of the year. At this point the diminishing shadow on the north side vanishes and the pyramid seems to "swallow" its own shadow. This shadow-reflection method of time measurement is accurate enough to measure a year to within a fraction of a day.

The Great Pyramid was at one time a very fine observatory. In order to make accurate stellar charts a meridian line, the line cutting the sky in half from north to south, needed to be measured and recorded. This line was found and then consolidated in a tunnel we now know as the descending passage, using the pole star to guide their digging. For that reason, if you stand in the descending passage you could see the pole star perfectly framed in the opening.

With this reference tunnel the rest of the pyramid could begin to be built, sighting up the tunnel at the pole star as the pyramid

Only in winter would a shadow be cast to the north of the pyramid, so in the summer the Egyptians could have utilized the sun's reflection off the highly polished mantle to tell time on the same paving stones located to the north of the pyramid.

This points up an interesting phenomenon of the vernal



The Great Pyramid showing its various passages and chambers.

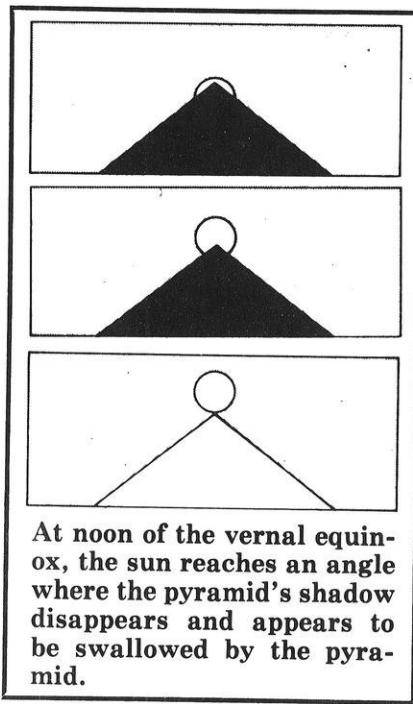
heightened. After a certain height, workers could no longer directly sight on the pole star, so they plugged the descending passage and created the ascending passage going up at the exact same angle that the descending passage goes down. Placing a pool of water at the juncture of the two passages would allow a builder to look down the ascending passage to the pool and see the pole star reflected in it. In this manner he could continue making accurate measurements using the pole star as a guide even though he could not directly see it.

At the top of the ascending passage is the sloping Grand Gallery, 157 feet long. Once this long narrow room was built, construction on the pyramid probably ceased leaving a truncated or chopped-off pyramid. The top of the Great Pyramid was not added until much later. Due to its method of construction, the true meridian of the sky would run right down the center of the opening as viewed from inside. This would create an observatory capable of making detailed stellar maps, so detailed in fact, that the maps produced could not be duplicated until the advent of modern telescopes.

Grooves in the walls of the Grand Gallery suggest some moveable apparatus to determine such things as the declination of a star, which is analogous to latitude on the stellar vault. The detailed stellar maps that would result would be another aspect of the pyramid that would aid in navigation and exploration. Not only could the gallery-observatory be used at night, but also during the day to record the sun's shadow and act as a calendar.

One unsolved problem in the Great Pyramid is the sarcophagus in the king's chamber at the top of the Grand Gallery. It may easily not be a coffin, for no mummies have ever been found in any pyramid. It also may have been a repository for a system of weights and may have had the basic astronomical ratios of the solar system built into its dimensions. Measurements of the stone box do seem to suggest this, but damage done to the sarcophagus by modern tourists had made detailed study difficult.

The fact that the temperature inside the king's chamber is always constant supports the idea that the sarcophagus was part of some highly accurate system of weights and measures. One solu-



tion to the sarcophagus is that it was a place of initiation for the religion of its time.

Legend has it that the initiate would lie in the sarcophagus and leave his body for three days in which time the gods would divulge to him the "great secret." It could have been the priests of this religion who designed the pyramid, the science and math necessary for such design being important aspects of their religion. Many ancient philosophers such as Sophocles, Plato, and Pythagoras hinted or admitted that they were initiates of this religion. Much of our modern mathematics is based on knowledge that the Greeks probably learned from this religion.

Recent discoveries have brought to light the fact that organic matter placed one third of the way up in a pyramid mummifies instead of putrifies. This phenomenon has even been used commercially for keeping milk fresh without refrigeration by putting it in a pyramid shaped container and for keeping a razor blade sharp for many times longer than its normal lifetime by storing it under a small pyramid between

shaves.

The possibility then exists that a pyramid is a lens capable of focusing energy simply because of its shape. This is supported by the story of Sir W. Siemens, a British inventor. While he and a friend were standing atop the Great Pyramid he noticed an acute ringing noise when he raised his hand with fingers outstretched. When he raised only his index finger he felt a distinct prickling sensation in it. He also received a slight electric shock when he attempted to drink from a bottle of wine he had with him. He then transformed this bottle into a crude Leyden jar by wrapping a piece of wet newspaper around it. Holding it over his head, the Leyden jar began to charge and eventually issue forth sparks. When this happened his Arab guide accused him of sorcery and tried to seize Siemens' companion. Siemens then lowered his charged bottle and gave the Arab such a jolt that it knocked him down. The Arab guide quickly picked himself up and ran down the side of the pyramid in terror.

There may be other undiscovered chambers in the Great Pyramid, but some strange characteristic, possibly the energy focusing phenomenon, has prevented cosmic ray analysis of the pyramid to determine if such chambers do exist. There may even be an underground labyrinth of halls and rooms that connect all the pyramids. Possibly the high priests lived in this underground domain. The Greek historian Herodotus speaks of this labyrinth in his writings. He describes the labyrinth as being even more fantastic than the pyramids themselves.

So we see that the Great Pyramid could have been a tomb, a temple, an observatory, or all of these and more. Whatever the case, the pyramids seem to be an elaborate time capsule built by a highly advanced race in order to record their knowledge. How much knowledge there is and how much we know of it is questionable. There may be facts or concepts recorded in the pyramid that we have not yet stumbled across in our modern scientific endeavors.

Frank DeCaria has helped provide a better home for thousands of fish in Old Hickory Reservoir.

Frank DeCaria holds a BS-ChE from West Virginia University. He's twenty-four years old and has worked at Du Pont's Old Hickory plant near Nashville for just over two years now.

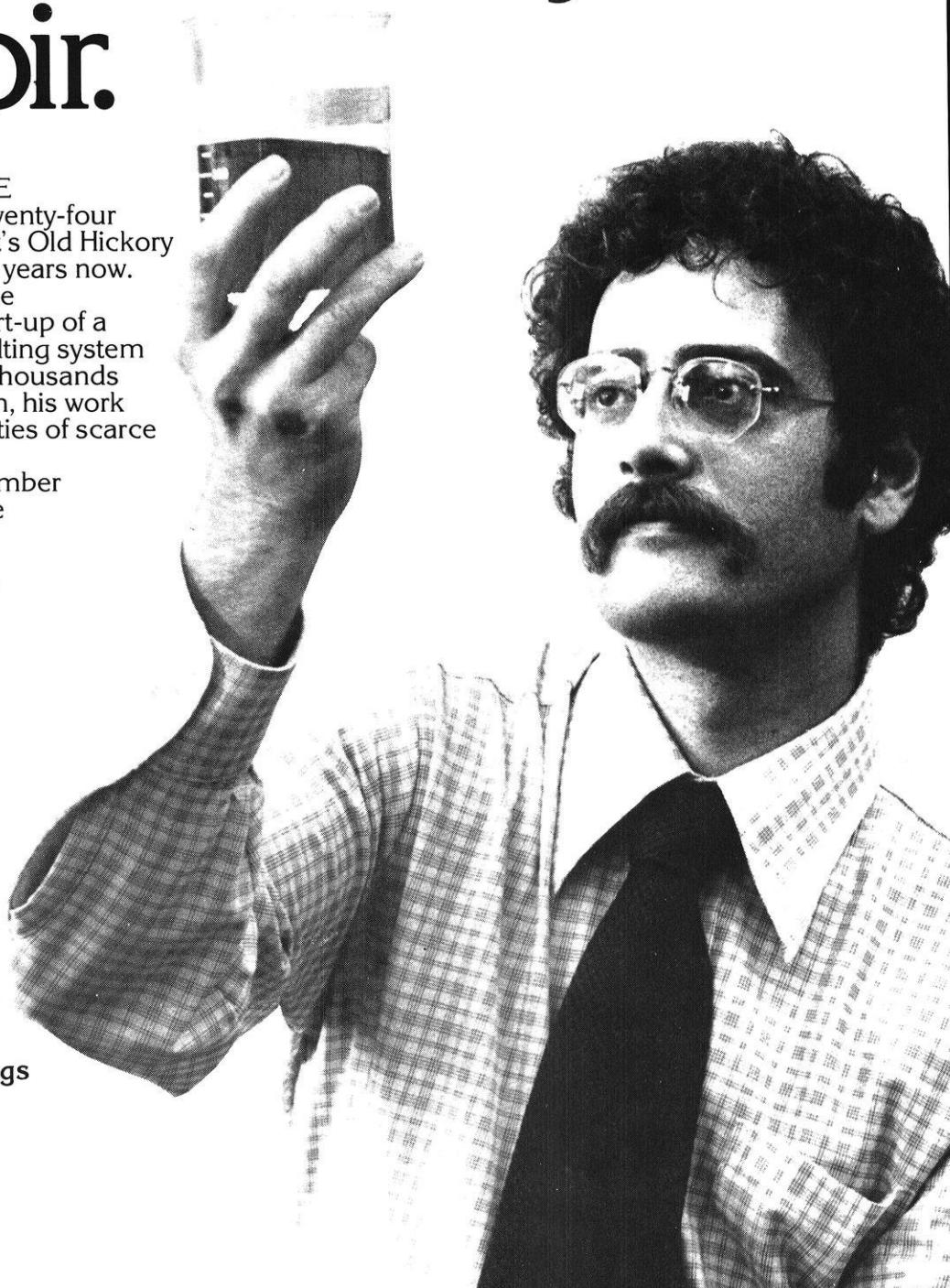
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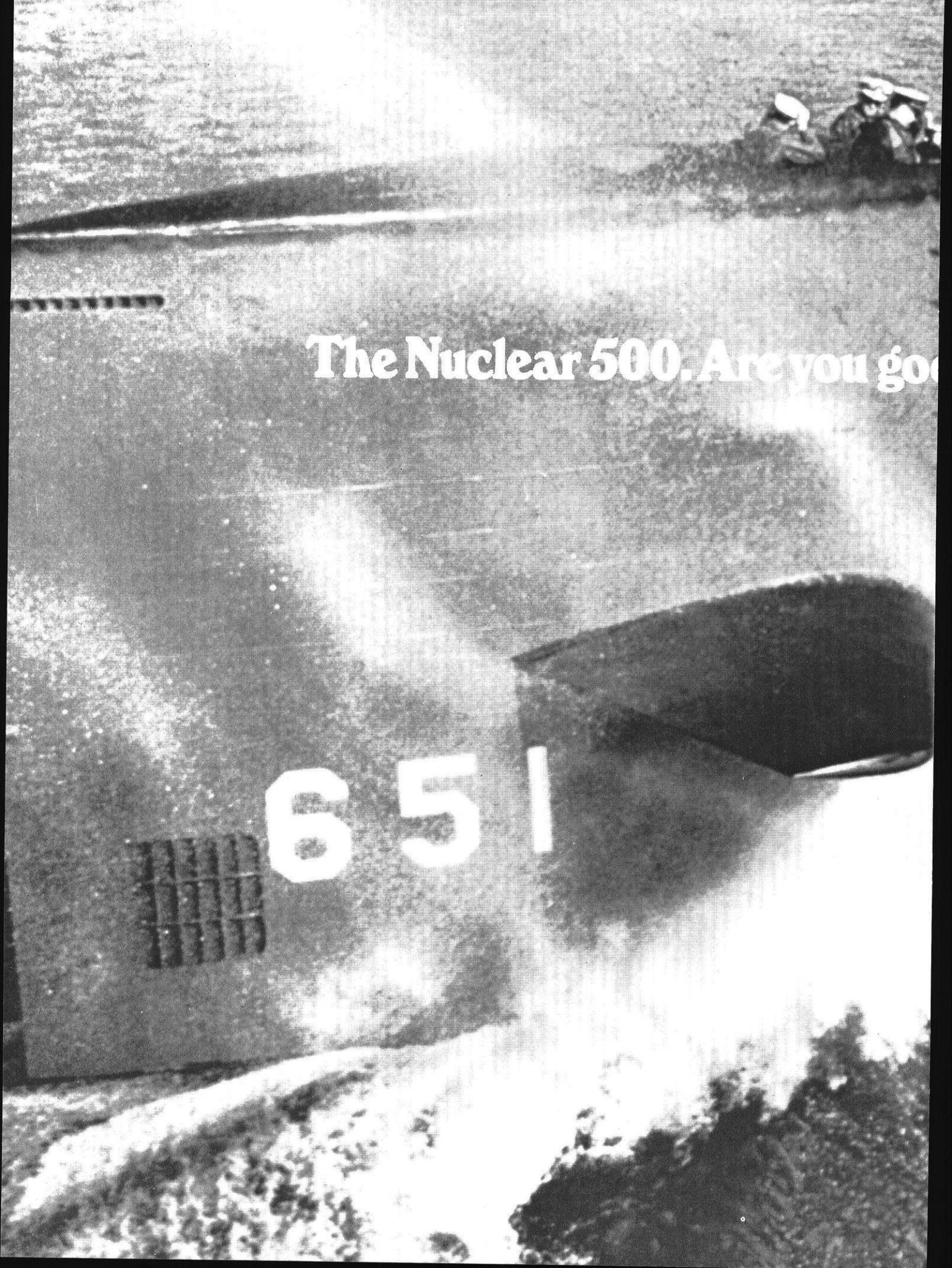
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To Salt . . .

or Not to Salt

by
Wayne Hochrein
of the
Engineer Staff

An American man once said if a man invented a better mouse trap people would beat a path to his door. As engineers we are constantly trying to make something that will do more, and work better and faster than before. But what constitutes better? How do we know what is better? This question can't be answered with a definition or hard fast rule.

As engineering students we are taught what is best engineering construction. But there is a need for people of all occupations to become involved and to make decisions for the benefit of people in the world around them. Engineers must help make these decisions because it is the responsibility of the engineer to keep other people aware of changes in technology.

An example of involved engineers is the University Salt Project. The University Salt Project is a study being done on direct and indirect problems on snow and traffic movement in Madison.

The Rivers and Lakes Commission requested the street division of the Department of Public Works submit a precise plan explaining a decrease in the use of salt on Madison streets for the winter of 1973-74. Using the Lake Wingra Water Shed area, in the winter of 1973-74 there was a city reduction of 1,936 tons of salt or (34%). In the Lake Wingra area there was 290.5 tons or 57.5% reduction.

The University Salt Project will obtain sufficient information to make reasonable judgements on the desirability of various alternatives for dealing with snow on

city streets. These alternatives basically involve salt, sand or mechanical removal.

Headed by Professor Howard Harrison of the Mechanical Engineering Department, different aspects are being investigated. These include environmental, industrial, engineering sociological and transportation areas.

The Project recommended the salt reduction policy be expanded into the University Bay Area for the winter of 1974-75.

Dr. Dan Willard, with the assistance of Prince Beach are investigating environmental aspects such as the salt effect on algae plumes or fish reproduction or the possibility salt could reach our water supply. This is done primarily through research dealing with studies done in Madison-type areas that answered similar questions.

Harrison, with Ken Rise, an undergraduate assistant, are studying the industrial aspects. They are looking at the work of the street department to learn how long snow removal takes for a given snowfall. Various alternatives and costs in terms of trucks, maintenance, fuel and man-hours.

Tom Heberlein, aided by Mike Prouty, is presently gathering information from the sociological point of view. The salting program directly involves the transportation of Madison citizens. Therefore their study will measure the public reaction to different snow removal alternatives. Public feedback will be obtained through surveys, hearings and juries.

The surveys attempt to find

people knowledgeable about the different snow removal methods. They will be asked about certain policy alternatives such as no salting, reducing speeds, purchasing new snow removal equipment, using other chemicals and other options.

Public hearings will also sample public opinion. These hearings aren't always fully representative, therefore other feedback juries will be formed. Juries consist of various people asked to come and spend time listening to various reports on the snow removal problem. They then give their ideas on the subject. They are salaried, as are juries in judicial proceedings. Random samples of opinion are also a possibility.

The transportation aspects of the project are being looked into by Prof. Herm Kuhn with two graduate students, Mike Lynett, and Ron Marshall. They will investigate physical systems damage, and the mobility and safety aspects.

Physical system damage would deal with decay of sign posts, roads and transportation vehicles.

The mobility and safety aspects would include change in accident frequency and transit time in the areas under study. Special attention will be given to safety.

This is being done by literature review. They will also interview taxi-cab and insurance companies, bus lines, and the major utilities firms.

Whatever these engineers discover, their community involvement will prove invaluable to the city of Madison.

Some people are starving for more than a passing grade in English.

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"A Canticle for Liebowitz"

by Walter M. Miller, Jr.

"And Satan spoke unto a certain prince, saying: 'Fear not to use the sword, for the wise men have deceived you in saying that the world would be destroyed thereby.'

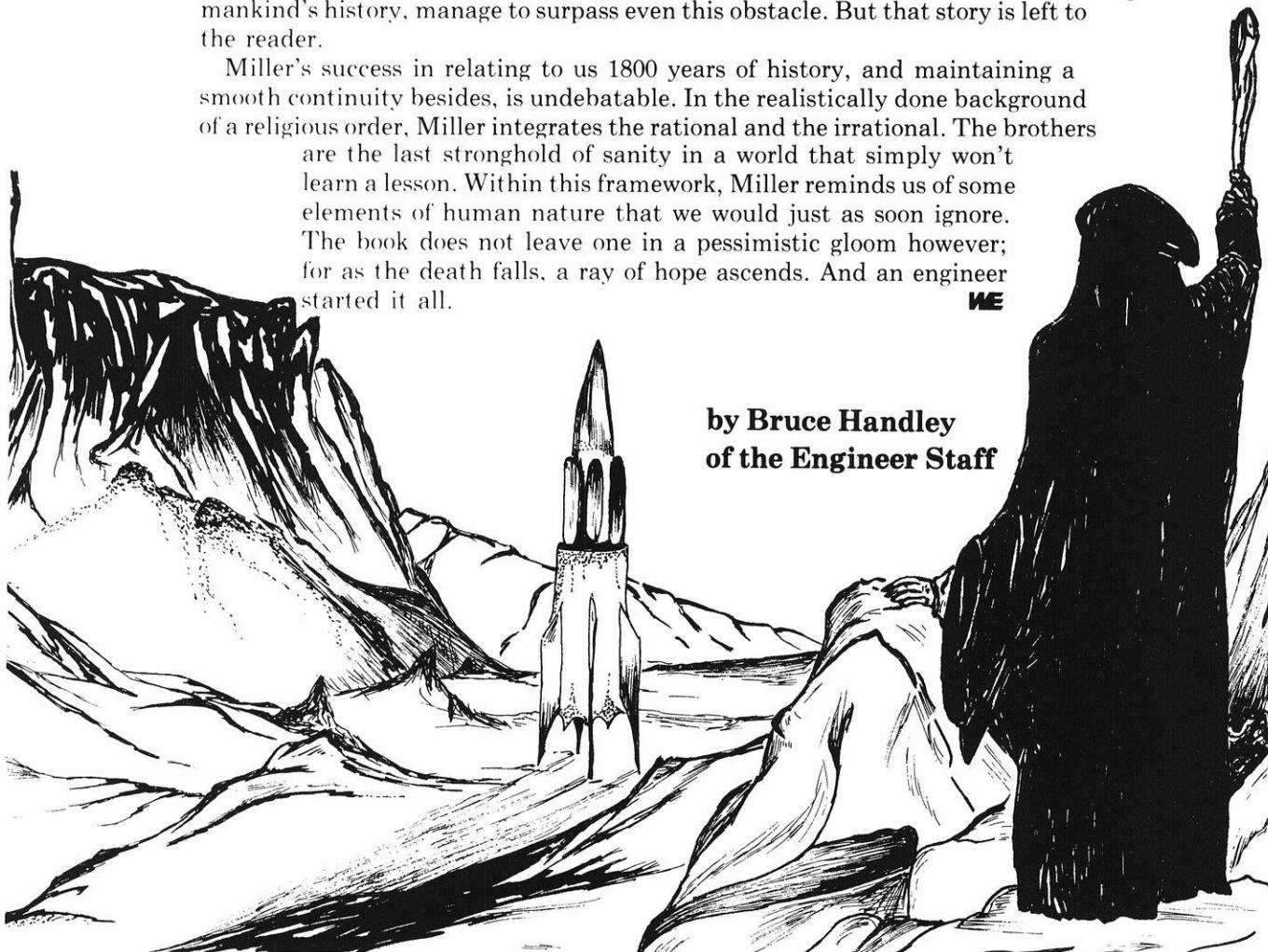
And thus it began, again. The cycle of a cataclysmic history retraces itself. Are we trapped on a vicious merry-go-round of destruction and rebirth, destined to burn civilization to a cinder again and again? This is the question that Miller poses as he relates the events of over 1800 years of earth's history. The narrative starts several centuries after a nuclear holocaust that decimates the world's population. The world endures another Dark Age in which the only glimmer of hope lies with the Order of Saint Liebowitz, a religious order dedicated to the preservation of human history. The patron saint of the order, Saint Liebowitz, was an electrical engineer who founded the order after the "Flame Deluge" and who was martyred during the ensuing Simplification, a time of book-burning and mass murder in which nearly all technology was destroyed. The few books which remained were the sacred trust of the order. Over the span of the next 700 years, we see the whole of human history repeated. Miller takes us through the Age of Darkness, the rise of the city-states, and the coming of the war-lords. He sketches the rebirth of science and the rapid rise of technology as the cryptic texts in the order's libraries are deciphered. As we watch the rebirth of mankind, we see the seeds of destruction sown again. The Cold War environment makes another appearance and mankind rushes inexorably toward yet another Armageddon. The brothers of the Order of Saint Liebowitz, in their long and patient attempt to preserve mankind's history, manage to surpass even this obstacle. But that story is left to the reader.

Miller's success in relating to us 1800 years of history, and maintaining a smooth continuity besides, is undebatable. In the realistically done background of a religious order, Miller integrates the rational and the irrational. The brothers

are the last stronghold of sanity in a world that simply won't learn a lesson. Within this framework, Miller reminds us of some elements of human nature that we would just as soon ignore. The book does not leave one in a pessimistic gloom however; for as the death falls, a ray of hope ascends. And an engineer started it all.

WE

**by Bruce Handley
of the Engineer Staff**



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Thomas G. Longlais, B.S., 1969, Michigan Technological University; M.S., 1972, University of Wisconsin, Civil Engineering. Presently, assistant chief structural design engineer, Structural Design and Drafting Division.

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New Technology Invades Newsroom

Computerized technology has crept into all walks of life from pharmacy to journalism. This month, the Engineer examines the use of a computerized Video Display Terminal (VDT) in operation in the newsroom of a medium-sized daily newspaper, The La Crosse Tribune. While the VDT has increased the efficiency of newspaper work, some feel that it has removed some of the glamour of the old-time newsroom. . . .

By
**Susan
T.
Hessel
of the
Engineer
Staff**

Change, most journalists would agree is good—except when it comes to their own newsroom. There they'd like to continue pounding out stories on old Royal or Underwood typewriters aged by long years of deadline work.

Newspaper management, on the other hand, looks toward ways to make more efficient the entire news operation from the newsroom to the composing room. And, much to the unhappiness of some reporters that involves giving up the trusted typewriter for Video Display Terminals (VDT) connected to computers.

The new VDT process, which virtually eliminates the composing room, has the reporter setting his own copy. This has allowed the Davenport (Iowa) Times Democrat to decrease the number of manhours required to print a newspaper page from 8.94 in 1966 to 1 hour in 1974.

Money is also saved in supplies. Since reporters work directly on the video screens, less copy paper

is needed. Further, computer costs have dropped radically in the last decade to a point when on some terminal, the cost is less than one dollar an hour. Computer time in the future is expected to cost even less. The La Crosse Tribune, La Crosse, Wis., is an example of a newspaper adopting the new technology. The Tribune, a paper of 36,000 circulation in a city of 51,000 people, is part of Lee Enterprises, a chain of 13 newspapers that will be completely electronically produced in five years.

Working with the Harris 2500, The Tribune will have by February 11 terminals costing \$150,000. Reporters will compose their stories on the video screens, the culmination of two years of change for the paper that began with a change to cold type and a new building built to handle a new \$500,000 offset printing press.

When the city hall reporter sits down at the terminal to write a story, he first fumbles around looking for the power switch. Then

he types in his name, which department the story is for and a "slug line" for his story about the mayor, —"Mayor's a Crook." That helps the editors, reporters, printers and newspaper libel attorney trace the story in the computer memory.

Then the reporter instructs the machine on the format the story should be printed in—i.e. format one is one column wide, 9 point

where the letter he types on the keyboard will go. The cursor then moves along as he types the story about the mayor embezzeling money from the city bank account.

If an error is made in writing the amount of money stolen, the reporter puts the cursor on the wrong figure and writes the new one over the old one.

If the reporter left out his



Mahlon Hinkson, chief printer for the University of Wisconsin Typographical Laboratory in Vilas Communications Arts Hall, operates a type composing machine. This sets type according to a computerized punch tape.

type on a ten pica wide column. Other formats indicate other column widths or the cutlines that go under pictures. The idea is to eliminate the repetitive work by logging it in the computer memory.

The reporter then sets the cursor, or square of light, indicating

partner in crimes, he moves the cursor to the spot where he would like to put in a paragraph and pushes "insert" and then types the paragraph.

If the reporter decides the paragraph about the mayor beating his dog is not pertinent to the story, he pushes "delete

paragraph" and moves the cursor to that paragraph and it will disappear.

Paragraphs can be changed around if the editor thinks one of the crimes the mayor committed is more important than the other. Whole paragraphs of letters move around changing places like ants marching on the ground.

The lazy city hall reporter doesn't have to return the carriage himself because the computer automatically justifies the lines on the screen. The screen holds 12 lines in view at a time, but can be scrolled up and down to see what libel has been written already.

When the reporter is done, he sends it to the computer memory to be called by the city editor. The editor looks it over and sends it back to the reporter for additional work suggesting the reporter talk to other people besides the person the mayor defeated in his last election race.

At the copy desk, the story is then "called" again to read and search for errors. The headline is written and is passed to the computer again. All proofreading is done before photocomposition because few errors are made in that process. Photocomposition is the process of converting tapes punched through the keyboard into type.

The material displayed on the VDT is printed on magnetic type at a speed of 90 lines per minute, completing a process that means a story can still get in the paper ten minutes before the lock up deadline for an editor.

Stories can not be lost in the machine because of the recall mechanism. In addition, reporters will be able to get a "hard copy" of their story printed out by the computer for a permanent record.

This process is obviously quite an improvement from Johann Gutenberg's press invented in 1453. In an age when most newspaper readership is in the suburbs beyond the central city the process means later deadlines without hurting the ability to get the paper to those areas.

Wire service hard copy will be scanned by the news editor for stories of interest. They are then recalled from disc storage of wire lines connected with the system. A

hard copy printout on a low speed line printer may be requested to be used for future reference purposes, background editorial writing.

Layout of pages will also be done on the Harris. The copy will be read in the machine in the exact point size of the type in the paper. The keyboard-directed cursor can move copy wherever the editor wants it. He can see immediately what will fit and what changes need to be made. The machine can do a whole range of editing such as fitting, movement of copy blocks and changes in point size.

Advertising, the real money maker of newspapers will be using the terminals just like news.

When a classified ad is taken, the Harris 2500 shows a blank form on the screen and the operator then fills in the correct information. The system will check automatically to make sure all necessary information is included such as stop and start dates.

Ads can be called for corrections, extension or kills. When the ads expire, the accounting information automatically is passed to the accounting department.

Display ads, or the bigger ads, can also be recalled to make corrections. When the layout on the screen is correct, the ad is taken back to the Harris 2500 system for on-line typesetting. The display ads can be produced without perforated tape cutting the handling and pasteup time.

Journalists are a dramatic group. Many claiming that computers destroy the romance of the profession. But, management says the real romance in the work is not in the kind of type the paper is printed by, but in the accomplishment of writing a good story.

Another concern is for workers displaced by eliminating the composing room. Strikes at the St. Louis Post-Dispatch, St. Louis Globe Democrat, Detroit News, Detroit Free Press and others have been directly related to the elimination of jobs. Printers unions are powerful and their strikes have destroyed newspapers in New York City.

How does the La Crosse Tribune handle these problems? The world is adaptability, according to publisher Kenneth Blanchard.

Those employees willing and able to learn new skills during the time of change will be guaranteed a job. A solid severance plan is given to those who don't want to retrain or who are young enough to get involved in a new career. The Tribune worked to get those people new jobs in the community, Blanchard said.

"Advertising, the real money maker of newspapers, will be using the terminals just like news."

"We try to take the printer who was trained in hot metal from our plant and retrain them to use cold type. This has been a problem in their mental thinking more than anything else," he said.

Sander Hook, the office manager of the Tribune, called the new equipment "word processors."

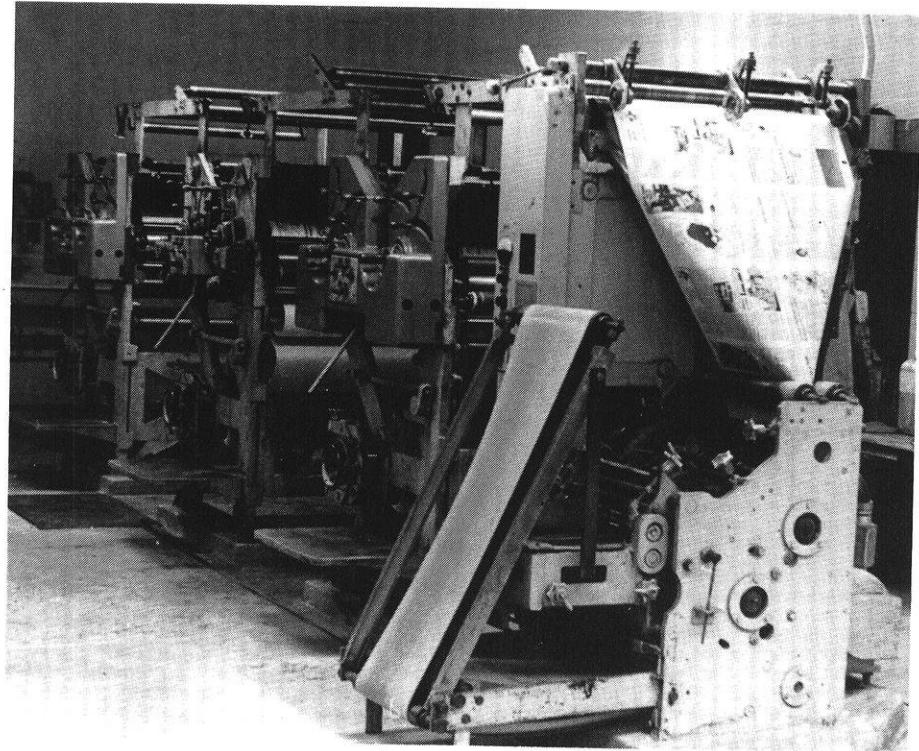
The advantage to this system is that the perforated tape punched to activate the cold type, no longer needs to be punched by hand by key punchers. This means those jobs are basically eliminated along with the cost of their salaries.

Since The Tribune got their offset press in August, 1973 the composing room, where the tape was punched, has gone from 32 people to 16.

The Tribune, according to Blanchard was one of the first newspapers to begin using perforated tapes in the midwest in 1949, indicating the paper has always been progressive in its technology.

"What this meant to all our people was they had to learn codes for copy to produce the tape that would drive the computer to set the type. They have become rather knowledgeable as a result of a learning process that included a lot of mistakes," Blanchard said.

There were never any secrets about what would be happening to the newspaper according to Blanchard. At the Tribune, relationships on the staff are easy.



The offset printing press, a quicker and cleaner printing method has revolutionized newspaper production. Pictured here is the offset press of the University of Wisconsin Typographical Laboratory in Vilas Communications Arts Hall.



A University of Wisconsin journalism student practices on the Hendrix Editing Machine, which is a Video Display Terminal (VDT). Her news copy appears on the screen before her.

There are hierarchies, but not as steep as in other papers. Printers, the editor and reporters feel comfortable enough to sit down to eat lunch in the new \$1.5 million building's lunchroom.

"The lunchroom," says Blanchard, "is one of the best things we did at this building. It makes people accessible."

"We handled this in the right way. We tried to deal with change as we become a sophisticated system so that people really understand. We tried to tell them there is nothing they can't learn if they apply themselves," Blanchard continued.

The newspaper offered to train the staff by sending them to schools in photocomposition all over the country. Also, there is a real sense of importance for employees to feel a part of new plans. Blanchard said technological changes are threatening to the people affected by them. Not only do people worry about what will happen to their jobs but they also are reticent about the "mystery" of computers.

"We tried to take people and be

very humane about it. Very open. We tried to remove the mystery and doubts that people have," Blanchard explained. "Some people in the newsroom say they will not be able to operate the Harris 1100 (the temporary terminals in the newsroom that are used for some routine stories by the keypunch operators) and worry about the day the other terminals will be here and when the typewriters will be gone."

Richard Mial, 25, a reporter with the Tribune for three months, is an example of a reporter who is not looking forward to the new terminals—but one who is resigned to their coming.

"I worry that there will be fewer checks on our copy. I can't believe copy will be proofread as well," he said. "I have a real attachment to my typewriter. It's an Underwood that fits the image of a reporter so much more than computers."

"I know that they are coming and it is something that I have to accept. I know I will get used to them. But, I think I will always miss the romance connected with old newsrooms," he concluded.

Adjustment at the Tribune to

the changes in the newspaper has been very good, according to office manager Hook. Everyone still on the staff has retrained and will be kept on past the time when the other terminals arrive. The only people not retained will be part time tape perforators, he said.

"The people part has already taken place when we went from hot metal to photocomposition in 1972. The real crunch took place dropping the composing room personnel from 32 to 16."

Hook said the remaining staff has been very happy about the idea of new printing systems and they enjoy the new skills they have learned.

"We were out to avoid the kind of problems they had on metro newspapers. We never had any kind of adversary relationships with unions," he said.

Hook said employees who left went by their own choice. He felt the newspaper worked hard and fairly to find them good jobs elsewhere and good severance plans.

Robert Spacek, the Tribune technical services coordinator, is an example of a printer who over the years has been excited and interested in the new technology rather than frightened by it. He has become a supervisor in the plant in 10 years.

Spacek started with the Tribune in 1964 as a printer. Interested in electronics, Spacek took courses at Western Wisconsin Technical Institute and La Crosse technical school. The Tribune has since sent him to training schools in Boston, Davenport Ia., (the Lee Headquarters) and elsewhere in the country capitalizing on his interest and enthusiasm.

"Over all, it has been fantastic," Spacek said. "We had cooperation with really good management. They were really good in retraining people. They didn't really lay anybody off."

Spacek said jobs were eliminated through attrition. When people retired others were not hired in their places.

"All people had to do was retrain in the new process. All the people working in cold type processes now are glad to have the jobs they have. I like my job, that's for sure," he said.

Interview dates

Spring 1975

MONDAY, FEBRUARY 3

Johnson Controls
 Koehring
 Marathon Electric
 N. L. Industries
 Rohm & Haas
 Wisconsin Electric Power (1 of 2)
 U. S. Patent (1 of 2)
 Action/Peace Corps/Vista (1 of 5)

TUESDAY, FEBRUARY 4

Charmin Paper (1 of 2)
 Control Data (1 of 3)
 FMC - Northern Ordnance
 Hewlett Packard (1 of 2)
 Illinois Dept. Transp.-Div.
 Waterways
 Inst. of Paper Chemistry - In
 Chemistry
 Interstate Power
 Milwaukee Road
 U. S. Patent (2 of 2) if needed

WEDNESDAY, FEBRUARY 5

Charmin Paper (2 of 2)
 General Dynamics
 General Electric (1 of 2)
 Hewlett Packard (2 of 2)

THURSDAY, FEBRUARY 6

Borg Warner (Chemicals Div.)
 General Electric (2 of 2)
 IIT Research Institute
 Penn Controls
 Stauffer Chemicals
 Westinghouse (1 of 2)

FRIDAY, FEBRUARY 7

Barber Colman
 Bucyrus Erie
 FMC - Chemical Div.
 FMC - Ind. Chemicals (Wyo.)
 Globe Engineering
 Illinois Tool Works (2 of 2)
 Mead Johnson (3 of 3)
 Rexnord
 Warner Swasey
 Westinghouse (2 of 2)
 U. S. Atomic Energy (2 of 2)—Now Energy R & D Adm.
 Corps of Engineers

MONDAY, FEBRUARY 10

Atlantic Richfield
 Kohler (1 of 2)
 Oilgear Co.
 Olin Corp. (1 of 2)
 Scott Paper
 Uarco (1 of 2)
 Walker Mfg.
 Zimpro

TUESDAY, FEBRUARY 11

American Electric Power
 Amoco Chemicals
 GTE Automatic Electric
 DuPont (1 of 2)
 Motorola (1 of 2)
 Olin (2 of 2)
 Union Carbide Corp. (5 divs.) (1 of 2)

WEDNESDAY, FEBRUARY 12

Consolidation Coal (1 of 2)
 Continental Oil (1 of 2)
 DuPont (2 of 2)
 Lawrence Livermore
 Motorola (2 of 2)
 Nekoosa Edwards
 PPG (1 of 3)
 Union Carbide Corp. (2 of 2)

THURSDAY, FEBRUARY 13

Ansul Co. (1 of 2)
 Cargill
 Clark, Dietz & Associates (1 of 2)
 Consolidation Coal (2 of 2) if needed
 Continental Oil Co. (2 of 2)
 Factory Mutual
 McDonnell Douglas (1 of 2)
 Mobil Oil (1 of 2)
 Shure Bros.
 Texaco (1 of 2)
 Underwriters Labs

FRIDAY, FEBRUARY 14

Ansul Co. (2 of 2)
 Babcock & Wilcox
 Beloit Corp.
 Clark, Dietz & Associates (2 of 2)
 McDonnell Douglas (2 of 2)
 Modine Mfg.
 Texaco (2 of 2)

MONDAY, FEBRUARY 17

Allen Bradley
 American Can
 American Natural Gas
 B. F. Goodrich
 Square D Co. (1 of 2)
 Std. Oil of California (1 of 3)
 Unico
 Upjohn
 Naval Nuclear Power Directorate

TUESDAY, FEBRUARY 18

Bell System (1 of 4)
 Dow Chemical (2 of 3)
 Johnson's Wax
 National Steel
 Square D Co. (2 of 2)
 Std. Oil of California (2 of 3)
 Std. Oil of Ohio
 Trane Co. (1 of 4)

WEDNESDAY, FEBRUARY 19

Bell System (2 of 4)
 Corning Glass (1 of 2)
 Dow Chemical (3 of 3)
 Falk Corp.
 National Cash Register
 Sargent & Lundy
 Shell Development
 Std. Oil of California (3 of 3)
 Trane Co. (2 of 4)

THURSDAY, FEBRUARY 20

Corning Glass (2 of 2)
 Fluor Pioneer
 General Dynamics (Electric Boat Div.)
 E. F. Johnson
 Ladish
 Leeds & Northrup
 Los Angeles County
 Torrington
 Trane Co. (3 of 4)
 Waukesha Motor

FRIDAY, FEBRUARY 21

Amoco Chemicals
 Broyles & Broyles
 Hamilton Standard
 Kimberly Clark
 Masonite
 Quaker Oats

St. Regis Paper
Snap-on-Tools
Union Oil
U. S. Army Material

MONDAY, FEBRUARY 24

American Appraisal (1 of 2)
Combustion Engineering
Deere & Co. (1 of 2)
Eaton Corp.
Hercules
Pratt & Whitney (1 of 2)
Raytheon (1 of 2)
Tektronix
Wisconsin Public Service (1 of 2)
U. S. DOT - Federal Highway

TUESDAY, FEBRUARY 25

Allis Chalmers (1 of 2)
Arthur Andersen
Deere & Co. (2 of 2)
Exxon (1 of 4)
Pratt & Whitney (2 of 2)
Procter & Gamble (4 divisions) (1 of 2)
Raytheon (2 of 2)
Wisconsin Public Service (2 of 2)
Naval Ordnance Labs

WEDNESDAY, FEBRUARY 26

Allis Chalmers (2 of 2)
Alcoa
Exxon (2 of 4)
3M Co. (1 of 3)
Mirro Aluminum
Procter & Gamble (2 of 2)
SUMMER

THURSDAY, FEBRUARY 27

Amer. Cast Iron
Carrier Corp.
Chicago Bridge & Iron
Container Corp. of America (2 of 2)
Exxon (2 of 4)
Honeywell (1 of 2)
3M Co. (2 of 3)
Wisconsin State Government

FRIDAY, FEBRUARY 28
Baxter Labs
Borg Warner-Roy C. Ingersoll
Research
Continental Can
Exxon (4 of 4)
Honeywell (2 of 2)
Limbach Co.
Oscar Mayer (4 of 4)
Republic Steel (2 of 2)
Westvaco

MONDAY, MARCH 3

Argonne Labs R&D
Caterpillar (1 of 3)
Gulf Oil
Lakeside Labs
Litton Systems (1 of 2)
McQuay Perfex
Minnesota State
Nestle Co. (1 of 2)
Ohio Brass
Wisconsin Natural Gas
Wisconsin Power & Light (1 of 3)

TUESDAY, MARCH 4

Louis Allis
Applied Physics (1 of 3)
Caterpillar (2 of 3)
Dairyland Power
I.B.M.
Litton Systems (2 of 2)
Oak Industries
Shell Companies (1 of 2)
Wisconsin Power and Light (2 of 3)

WEDNESDAY, MARCH 5

Applied Physics (2 of 3)
City of Chicago
Collins Radio (1 of 2)
Heil Co. (2 of 2)
Hughes Aircraft
Indiana Dept. of Natural Resources
Mead Corp. (2 of 2)
National Cash Register

Shell Companies (2 of 2)
Sperry Univac-Data Processing (2 of 2)

THURSDAY, MARCH 6

Collins Radio (2 of 2)
Harley Davidson
Fisher Controls
General Foods
Globe Union
Grede Foundries
Northern States Power
Peoples Gas
Rockwell International (1 of 2)
Sperry Univac-Defense Systems (2 of 2)
Xerox Corp.

FRIDAY, MARCH 7

Battelle-Columbus (2 of 2)
Chicago North Western R. R.
Giddings & Lewis
M.C.A. Engineering
M.I.T. Lincoln Labs
Material Service
Reliance Electric
Rockwell International (2 of 2)

MONDAY, MARCH 10

U.S.A.F. (1 of 2)

TUESDAY, MARCH 11

U.S.A.F. (2 of 2)

THURSDAY, MARCH 13

Procter & Gamble International (2 of 2)

MONDAY, MARCH 17

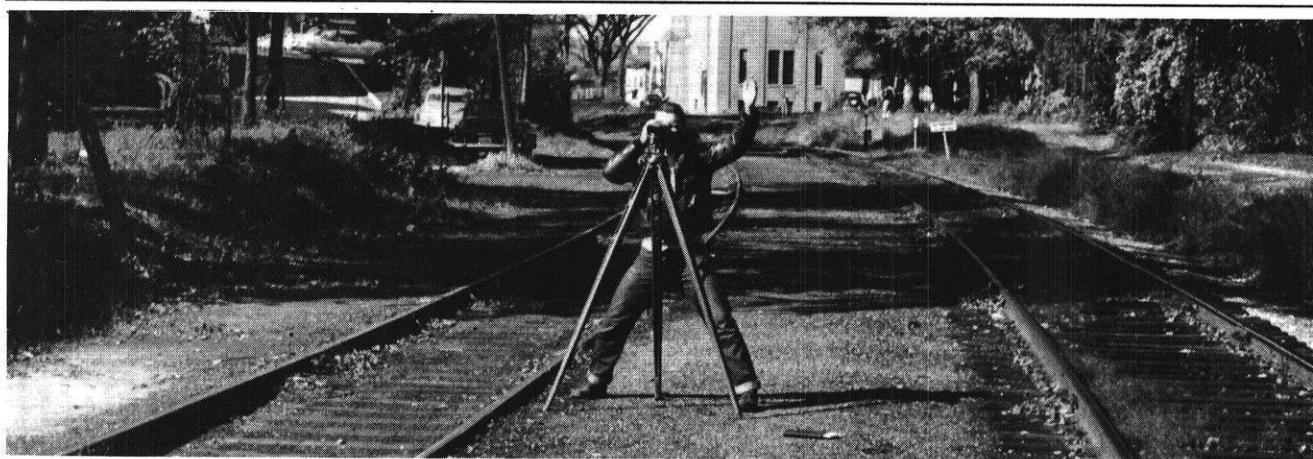
U. S. Marines (1 of 2)

TUESDAY, MARCH 18

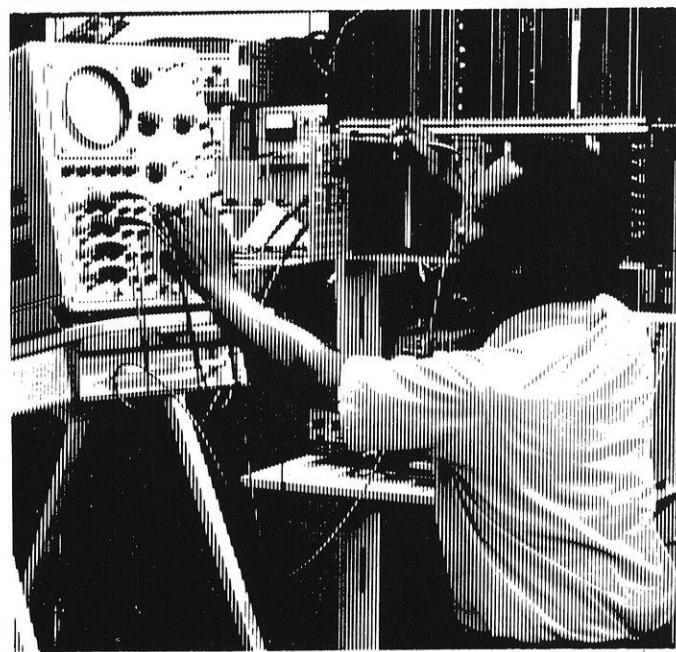
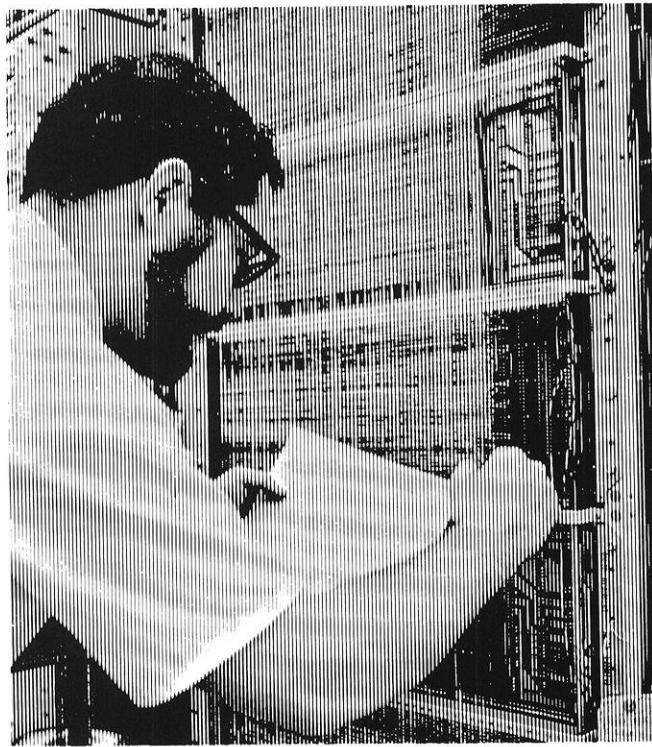
U. S. Marines (2 of 2)
U. S. Navy (1 of 2)

WEDNESDAY, MARCH 19

U. S. Navy (2 of 2)



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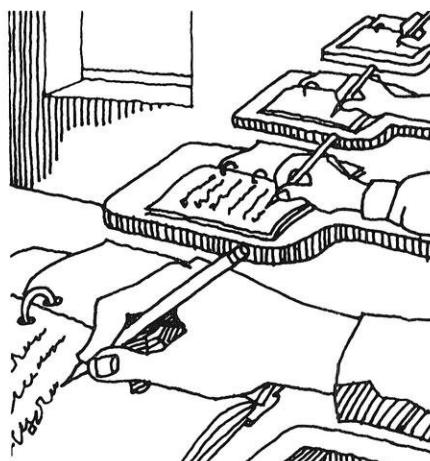
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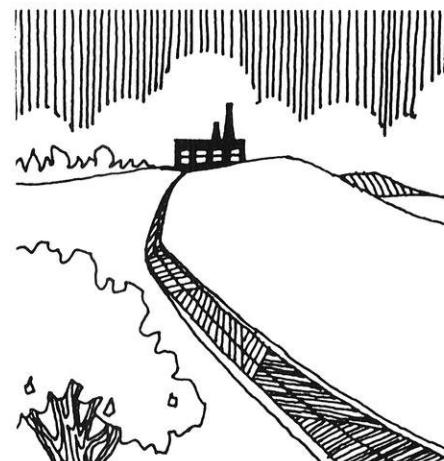
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