"Traffic is terrible today!"

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Young engineers at GE are also working on the solutions to thousands of other challenging problems—products for the home; for industry; systems for space exploration and defense. When you begin considering a career starting point, think about General Electric. For more information write for brochure ENS-P-65H, Technical Career Opportunities at General Electric. Our address is General Electric Co., Section 699-22, Schenectady, New York 12305.
A Holiday Table

Whether or not you excel at giving bouillon brundishes, taffy teas, or simple suppers, an elegant holiday sit-down dinner may seem like a moment of truth.

But fear not... we live in an age of restrained elegance. Sift the rules of table setting etiquettes, add the best of the past to the spirit of today, and your holiday table will deserve and receive glowing words of praise from your guests.

A patterned or colored tablecloth helps set a festive mood and enhances your silver. English Provincial silver, a Reed & Barton flatware, is an example of design in harmony with today's uncluttered look, yet in the tradition of holiday past.

Your centerpiece may reflect the folklore of the holiday or it may be a classic dinner table arrangement. It may also be a tableau of objects that display your awareness of beauty in all things. Lower your artistic sights, however, if your centerpiece starts to rise above 12 inches. If you want your guests to see one another, keep your centerpiece low — and your candles, if you use them high, so that they will not flicker antagonistically at eye level.

Miniatures of a holiday symbol — chocolate, papier mache or what have you — an assortment of fruits and vegetables accenting the colors of the season may be arranged on leaves, directly on the table, or on a mat or tray. Various things can be found in most households which would be suitable for flowers or fruit and vegetable arrangements. Lazy susan, pedestal cake plates, soup tureens, punch bowls, baskets, or souffle dishes are likely candidates, as is any long rectangular container.

A grouping of small potted plants, or large, fat blossoms floating in a shallow bowl makes an attractive arrangement. If you have tender feelings for an old wooden toy or seashell collection, a candelabrum, gingerbread house, or your favorite piece of driftwood, by all means, use it in your centerpiece.

The size of the centerpiece will be geared to the size of your table, as will the space allotted for each place setting. If you have enough room at the table, plates may be 30 inches apart — from center to center — otherwise 24; certainly never less than 20 inches, or your guests will really be rubbing elbows together!

Since napkin rings are now being used as decorative table appointments, and not merely to save family laundry, their use will save valuable inches and keep the table from looking crowded. Napkins are placed to the left of the forks if the first course is in place. If not, the napkin may be placed on the place plate.

Forks, of course, are placed to the left of the plate. The one to be used (continued on page 22, col. 2).

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2
THE SOCIAL CONSEQUENCES OF SCIENTIFIC AND TECHNOLOGICAL PROGRESS

DR. EUGENE G. FUBINI
Vice President and Group Executive
International Business Machines Corporation

In recent years we have heard a great deal about the "technological explosion." In fact, we’ve heard about it so often that it’s become a cliche. This is fortunate because we are inclined to treat cliches superficially and give them very little thought.

No one needs to tell us about the obvious results of the explosion — radar, computers, nuclear energy, space flight. But too many of us — especially the young engineers among us — have become so involved in making these things happen that we may be overlooking some significant ramifications of our work which transcend the most obvious results of it.

Since the beginning of this century, the average man has grown increasingly aware of the immediate impact of science and technology on his daily life. Once poles apart, these two forces have merged, and unlike biology and medicine or economics and management, they no longer represent a clear separation of inquiry and application. Polytechnic schools and universities are no longer distinct institutions. Phrases such as "applied research" and "advanced technology" have entered our language.

In short, the two ends of the physical sciences have merged into a single spectrum. Each has multiplied the force of the other, and together they have penetrated the consciousness of the people.

Not too many years ago the average man didn’t know about science and technology, and he didn’t care. Today, technical issues have become political issues. Once, governments rose and fell almost entirely on the basis of social and economic issues — soft money versus hard money, tax cuts versus tax increases, welfare versus laissez-faire. Today, political campaigns include technical debates about nuclear power, weapons systems, communications satellites, pollution control, automobile safety, and many other such concerns once deferred almost entirely to scientists and engineers.

Yet, in spite of their special competence, too many of today’s young scientists and engineers have remained spectators rather than actors in this process. They are the instruments of one of the most profound social and moral forces in our lives today, and they are essentially unaware of it.

When businessmen make speeches, they often refer to the great opportunities and challenges enjoyed today by the scientist and engineer. One of my friends in engineering recently told me what they really mean.

"If you can define both the problem and the solution, it’s an opportunity. If you can only define the problem, it’s a challenge. Now I am going to offer you a challenge. I am going to ask you to consider the broader social consequences of technological progress, and I am going to challenge you to influence those consequences. Let me illustrate my point with an historical example."

ENTER MR. WHITNEY

At the end of the 18th century a Yankee technician created a machine so terrible that it prolonged for years the slavery of millions of human beings, precipitated the bloodiest war of the 19th century, and left us with one of the worst social problems we face today. Yet, this man is justly revered as a great American.

Of course, Eli Whitney didn’t know his cotton gin would do such things. All he set out to do was to find a better, faster way to separate seeds from short-fibered cotton. And if he hadn’t done it, someone else probably would have.

But imagine for a minute how different our national history might have been if Mr. Whitney’s terrible machine had never been invented.

In the last decade of the 18th century slavery was dying out in the American South. The return on the basic cash crops of the day — rice, indigo, tobacco — were too small to justify heavy capital investments in slave labor. And without slave labor, large plantations were all but impossible to maintain. Only cotton could make them profitable. The booming English textile industry could use all they could grow, and more. But only short-fibered cotton could be grown in the vastly inferior lands of the South — short-fibered cotton so difficult to seed that it was useless as a cash crop. It looked as if our great experiment should soon be sold off into small holdings farmed by a man and his family with little or no slave labor.

But the cotton gin changed all of that. It could separate more seeds from cotton in a few hours than an experienced slave could separate in several days. Slave labor of the South was almost entirely to cultivation and harvest. And the profits were immense.

Consider the market: From 1783 — ten years before the cotton gin — to 1790, British cotton imports grew from nine million to 26 million pounds a year. Yet as late as 1791 the southern planters produced less than 190,000 pounds and exported only a few hundred bags. Then came the cotton gin, and in 1825, the year of Whitney’s death, the American South raised and ginned three-quarters of the 228 million pounds of cotton imported by Britain.

In a little more than a generation, the South had reversed its direction. It had fallen out of phase with the rest of the nation, and had become a feudal society supported by chattel slavery.

You know the rest, from civil war to civil rights. But did you know that Whitney’s next great invention helped terminate the worst social effect of his first? In attempting to produce enough cotton gins to meet the demand, he conceived the principle of interchangeable machine parts, which he later used to mass-produce muskets for the government.

Interchangeable machine parts soon became essential to the rise of Northern industry, and just as Whitney equipped the South to precipitate the Civil War, he equipped the North to win it.

THREE LEVELS OF CHANGE

If we examine society’s reaction to inventions — Whitney’s and others — I think we can identify some important basic elements of that reaction. I think we’ll find three levels of change, each more profound than the previous level, and much harder to anticipate. And we will see how the scientific and technological innovations of today may have even more far-reaching consequences.

At the first of the three levels, a new device or technique provides us with a new and better way of doing something we have done in the past. We gin cotton, or we build muskets faster and more efficiently. We use internal combustion engines to make horseless carriages.

At the second level, we do entirely new things. We clear vast tracts of wilderness and use them to cultivate cotton, or we produce not only horseless carriages, but trailer trucks, tractors, and bulldozers.

At the third level, we make fundamental changes in our way of life to take into account these new technologies, and we revise our political and social morals. We justify slavery and go to war, or we buy a reliable, inexpensive automobile, move to the suburbs and take our children back to the country. We invent the supermarket and the shopping center; we group new cities around airports; we create urban ghettos.

Nikolaus Otto devised the four-stroke cycle and invented the modern internal combustion engine in 1876. It would have been as difficult then for him to visualize the supermarket and the ghetto as it would have been for Whitney to visualize the Civil War in 1793.

Of course, every invention doesn’t cause such obvious consequences. The safety pin, for example was an ingenious development. Anyone who’s ever changed a diaper will swear to it. But we’d be hard-pressed to find much significant in the way of second and third-level change.

Higher levels of change normally occur only when some significant technical parameter is changed by a factor of ten or more at the first level. Even then, unless the change occurs in a relatively small span of time — a few generations at the most, or a few decades — it will create very little, if any, disruption in our lives.

There are exceptions to this observation. The stirrup, for example, revolutionized society in the early years of the post-Roman world. It was a device as simple as the safety pin, but it made cavalry possible, and provided the middle ages with a weapons system capable of supporting feudalism. In general, however, both the factor of ten and the factor of time are necessary ingredients for significant social change.

Improvements in bridge building, for example, meet the factor-of-ten criterion. In fact, if we compare the 4,000-foot span of the Varrazano Narrows bridge in New York City to the 200-foot span of a Roman stone bridge, we get a factor of 23.
But it took 2,300 years to go from stone arches to air-spar steel cables, and society has adjusted to the change very nicely.

Our mechanical engineers have been a little rougher on us, and the effects of their work have been much more obvious. From Kitty Hawk until the end of the Second World War, for example, improvements in aircraft engines provides another factor of 23.

The Wright Brothers' first engine produced one horsepower for every 13 pounds of weight. By World War I, the ratio was one horsepower to 2 pounds, by World War II, it was one pound. By 1945, jetpropulsion engines were generating almost two to one. Jets and rockets have progressed even faster, going from a two-to-one thrust-to-weight ratio for early jets to 30-to-one for today's lift engines.

Changes in the cost and speed of travel have been even more dramatic. The Kitty Hawk flight cost about $64 a passenger mile, while today we pay about 7¢ a mile, or nearly a thousand times less, and almost anyone can afford it. What's more, with aircraft, we have increased the speed of travel by a factor of 100. The world has become a hundred times smaller, and we can already see some third-level changes.

Anybody who has been in Europe recently can see that air travel is making borders obsolete—that for passengers in a hurry, customs barriers already exist in name only. Because of technical progress, the old world of European nationalities is in ferment. The conflict between old and new is still visible, and the unifying forces of science and technology has not yet been settled. Technology has given us the common market in Europe, but it has also helped to retard the growth of such unity.

The so-called "technology-gap" between nations, for example, is becoming an important concept in international politics. The point of conflict, and one which tends to separate nations, not unify them. Up to now, such separatist forces have had the upper hand, and I can't predict what will happen. I am convinced, however, that it must end sometime.

THE ELECTRICAL ENGINEERS

So far, I have ignored the role of electrical engineers in this problem. I don't mean to, because electrical engineers—especially outstanding young electrical engineers—have become the worst trouble-makers of all.

For example, in the last 100 years they've increased the volume of communications in this country by a factor of 10,000. Imagine a line dividing the United States at the longitude of Chicago. A hundred years ago the equivalent of about one hundredth of a megacycle of information flowed across the line. Today, it's about 150 megacycles.

THE NATURE OF TECHNOLOGY

I believe that technology is essentially a benevolent force—that it tends to unify men, not separate them. The process is painful, and not always permanent. The ancient world of Alexander and the Caesars was essentially unified. But its technology—despite a highly developed governmental structure—was not powerful enough in those areas which touch the lives of the people to overcome the political, social and moral differences of the time.

I believe that modern technology may be powerful enough to accomplish what ancient technology could not. Look at the history of warfare: We began with limited wars and small-scale technology. We later learned to permit the mass production of massed weapons to provide the means of war through limited wars and less limited wars. But observe what has happened since World War II. The very same technology that made limited warfare obsolete is bringing back the limitations. Today we shrink from using the full power of our weapons. In spite of the nuclear sword-rattling of the cold war, our hot wars have once again become limited. Furthermore, most of them have only been fought as contained extensions of the cold war.

Now it is limited warfare the only hidden blessing of modern science and technology. As recently as a hundred years ago in this country, most of our population lived on farms in almost entirely self-sustaining family units. They could afford to maintain rigid, insular values and treat the rest of the world as remote, strange and probably inferior. Today, the rugged individual has been replaced by a new breed, equally rugged in his own way. He must function in a far more complex civilization. He has been deprived of many of his great grandfather's easy, black-and-white values. He has become far more dependent on other men. And yet he has survived and prospered. Furthermore, in spite of some healthy kicking and screaming, he's allowed his government to become increasingly strong and centralized in order to maintain and extend his progress.

Interestingly enough, the same technological forces which have given the direction of a more centralized government and society have had an opposite effect on the other side of the world in Russia.

There is a positive trend, with its attendant growth in communications and education, has worked in the opposite direction. It has served to give the individual a greater voice in his nation's affairs. He can understand and get more, consumer goods. His industry is gradually turning from quotas to profits as a measure of success. And, instead of trying to restrict freedom to travel, to think, to govern his own destiny.

The effect of technology on social and moral values has been so great over the last few years that today we can see these two apparently hostile systems of government converging. And this convergence is the belated consequence—not the cause—of the convergence of peoples' desires.

When people are cold and hungry, the desire for freedom has little chance to express itself. But let technology meet their needs, and they will become hungry for thought, for learning, for debate and for freedom. I can think of no better example to support my thesis.

The trend toward unity among nations, the ecumencial spirit among religions that 300 years ago were fighting in the battlefields—there are the consequences of an essentially benevolent science and technology.

I would like to conclude with an image that I have used in the past, because it represents the very positive nature of our progress and its promise for the future.

(continued on page 24)
Regional Visitation

**CHICAGO**

During the 1966-67 school year Eta Kappa Nu inaugurated a new Regional Visitation Program. This program is similar to Regional Conventions but with an entirely different purpose. The Visitations are intended to supply a medium for the mutual exchange of information by chapters and to give assistance to chapters that have problems. No minutes are kept and no Eta Kappa Nu business is conducted. At least one National Officer is present. During the past year Regional Visitations were conducted at New York, Chicago, Dallas, and Rolla. All were considered highly favorable, and the program is to be expanded this year. It is hoped that all chapters will have a chance to attend at least one Regional Visitation in a two-year period.

Pictured are some scenes in the highly successful Chicago Regional Visitation held on May 6th at the Automatic Electric Company. The picture at top-right is of Maurice Carr, grandson of the founder of Eta Kappa Nu. He was initiated into Eta Kappa Nu at Purdue in May. Just below are Jack Farley, National Vice President Elect, and John Leary, President of the Chicago Alumni Chapter.
Did you know that Christmas was not widely celebrated until long after Christ's death? It's a fact!

There is no record of anyone celebrating Christ's birthday until 400 years after He died. At that time in Rome, an imperial edict included Christmas (with Easter and Epiphany) among the three feasts on which theatricals must be closed. However, before this year of 336 AD, there was no deal of contention regarding the birthdate of Christ. Various authorities claimed it was January 6th, March 25th and December 25th.

Today, it really wouldn't matter what day we celebrate Christmas. As the noted theologian, Dr. Oswald Hoffmann, has pointed out, "We do not argue about whether He was actually born on that day, for we celebrate the fact that 'Jesus was born now and is Lord and Christ.'"

Birthdays were unimportant 2,000 years ago. We do not know the birthdate of any of the famous people of that period. No mention is made in the New Testament of the observance of Christ's birthday by the early church. In fact, Christians were excoriated to remember His death more than His birth.

Why, then, did December 25th come to be celebrated as Christ's birthday? Because many of the earth's inhabitants were once sun worshippers, since the course of their lives depended on the sun's yearly round in the heavens. Feasts were held to mark its return from distant wanderings.

In the south of Europe, in Egypt and Persia, the sun gods were revered with elaborate ceremonies at the season of the solstice. In northern lands, too, the middle of winter was considered a time for the days to begin lengthening, the time for the days to become shorter and shorter, the sun weaker and weaker. So these ancient sun gods, as one connects them at the same period that Christmas is now observed. They built great bonfires to give the winter sun god strength and to bring him back to life again. Thus, the central idea of the winter solstice — the return of light — made it a "natural" for a new Christian feast celebrating the hope of the world in the birth of Christ, the Light of the world.

The exact day and year of Jesus' birth has never been satisfactorily settled. But when the fathers of the Christian Church, in 440 AD, decided upon a date to celebrate, reluctantly chose the day of the winter solstice which was firmly fixed in the minds of the people as the most important festival up to then.

The Son of God was made man. That is why we keep Christmas: the Son of God was made man for us all, to make every day a new day of genuine love and service toward God as well as toward everyone with whom we live and work. This is what gives us Christmas: the trees, the lights, the ribbons, the candles, the gifts, or the greeting cards — but the incarnation of the Son of God.

They think that nothing can be which is not comprehensible by their little minds. All minds, Virginia, whether they be men's or children's are little. In this great universe of ours, man is only an insect, an ant in his intellect as compared with the boundless world about him, as measured by the intelligence and power capable of comprehending the whole of truth and knowledge.

Yes, Virginia, there is a Santa Claus. He exists as certainly as love and generosity and devotion exist, and you know that they abound and give your life its highest beauty and joy. Alas! how dreary would the world be if there were no Santa Claus! It would be as dreary as if there were no Virginias. There would be no childlike faith then, no poetry, no romance to make tolerable this existence. We should have no enjoyment except in sense and sight. The eternal light with which childhood fills the world would be extinguished.

Not believe in Santa Claus! You might as well not believe in fairies. You might get your papa to hire men to watch in all the chimneys on Christmas eve to catch Santa Claus, but even if they did not see Santa Claus coming down, what would that prove? Nobody sees Santa Claus. The most real things in the world are those that neither children nor men see. Did you ever see fairies dancing on the lawn? Of course not, but that's no proof that they are not there. Nobody can conceive anything outside himself that are unseen and unseeable in the world.

You tear apart the baby's rattle to see what makes the noise inside, but there is a world within which not the strongest man, nor even the united strength of all the strongest, can tear apart. Only faith, fancy, poetry, love, romance, can put aside that curtain and view the super-natural beauty and glory beyond. Is it all real? Ah, Virginia, in all the world there is nothing more real and abiding.

No Santa Claus! Thank God! he lives, and he lives forever. A thousand years from now, Virginia, ten times ten thousand years from now, he will continue to make glad the heart of childhood.

I have recently been thinking of the first Christmas I can remember. It was about 85 years ago when I was a small boy. I don’t think I had begun to go to Sunday School but I had heard Mother read to me from some paper or magazine which told of the lameness of one of the Reindeer of Santa’s team. I now forget whether it was Dancer or Prancer or one of the others. But I was troubled to hear of it. It meant the possibility that maybe Santa wouldn’t be able to come to fill the stocking I intended to hang behind the stove when I went to bed. The only good thing about the situation was that if Santa didn’t come he wouldn’t put the switches in the stocking I supposed would be left by him if I had done something wrong and needed to be whipped.

Soot Ebenezer was too small to hang a stocking so mine was the only one hanging when at 7 o’clock I went to bed. And the next morning as I was to look I wondered if Santa had been able to come. Yes, the stocking was filled and overflowing with wonderful things. I opened it and in it I learned the truth about the things I found in my stocking. I did not return course things. I ate the chocolates, walnuts and butter cookies were exactly the same as what we usually had. I supposed they came from Santa and I wondered why. And I did not that Christmas realize the gift-paper covered “Wand of Father Christmas” and the shawls shawls were used in building the fire in the stove the next morning. Later (long years later) Mother told me that they had done nothing to get anything to put in my stocking. So when they saw nothing in my stocking they thought it would be too bad if I found it empty. So they put things in which were close at hand. The “Wands” was made because they had noticed my interest in a larger one Nell had got to be used in some sort of performance the young people were to give. I kept that wand with greatest pride for a long time. It was to me a wonderfully happy Christmas.

Perhaps it was because I had no associations with children a little older than I was that I never heard any suggestion there was anything I had not exactly I heard in the stories. It was not until I was seven (when I began to go to school winters) that I heard anything came to make me suspicious of the exact truth of the Santa story. It was when I was invited to breakfast after this morning that it came into my mind that he had come home the night before as he came up the lane he saw Santa who had come out of the chimney and into his sleigh that was on the roof and quickly was drawn away by his team of deer. There was a few inches in snow on the ground and roofs of buildings. After breakfast I went out to look and could see no tracks in the snow on the roof of the house. I began to wonder how Santa could have been up there without leaving tracks. I asked no questions but I didn’t think about that evidence very seriously.

It was about that time that I wondered how the men could sit by the stove at Christmas and talk and talk about things of absolutely no interest to me. My Grandfather Paine was one of the constant talkers, my Father another, and at times another man would join. To sit and talk without doing anything else was something I couldn’t understand. And as I began to bed that night at the usual 7 o’clock I heard them talking until I went to sleep.

During that night I was aware of something unusual happening. When I got up the next morning Father said “Come with me” We went into the adjoining room which was where Grandfather slept, and I saw the wooden platform used in the slaughter house with something on it covered with a white sheet. Father lifted me up and pulled back the sheet and I saw the face of Grandfather. The one who had died during that Christmas night.

All that winter I was afraid if I went through the sitting room in the dark I might see Grandfather sitting in his chair. I had never heard of "Ghosts" but I was scared that I might see Grandfather. So for a long time if ever I was in that room in the dark I shut my eyes and felt my way without looking. I shall not try to mention all the “Merry Christmases” I can remember. But I’ll add that a great change has come during my memory in the manner after this day is observed. When I was a boy where I lived there was no Christmas Vacation. School and other activities went on as usual except for the day itself. I never heard of present being given except to children in the hand-up way. Today I remember the surprise we had that our hired man Jim Cooch should receive a special card with pictures and words printed on it from some friend in England. I was about a dozen years old and wondered if Jim was ashamed to have it known he had received them. The only such cards I ever had heard about were those given some children in connection with Sunday School exercises. But no adults had them.

Then when I was a woman who lived next door to where I was working with an "Envelope company" and his company was trying to see if they could sell cards to be used in sending greetings at Christmas. What a change since that time. One wonder is that with such loads of cards being sent now how seldom do we ever receive two alike. The other day sister Olive mentioned that of the dozens coming to us no two were alike.

Dear Mr. Editor: I am eight years old. Some of my little friends say that there is no Santa Claus. Papa says, "If you see it in the SUN, it’s so." Please tell me the truth, is there a Santa Claus? VIRGINIA, your little friends are wrong. They have been affected by the skepticism of a skeptical age. They do not believe except what they see.
They were busily opening presents now! I remember the staggering, unbelieving feeling that had taken me. There was nothing for me — there wasn’t going to be anything for me. No one seemed surprised there was nothing for me. Not even Claude. Not even Ethel. Not even Mamma — everybody was busy helping everybody else unwrap presents.

I was crying, now. I didn’t want to cry — it was just happening. Kelly reached me a block from my new box of new clothes, packed tight to the top with pieces of wood in odd shapes and sizes. I turned it around looking at it, but a sob like a hiccup came out of my throat, so I laid it down. Ethel was holding her new doll — the biggest, most beautiful dressed doll I had ever seen — with real curls. Claude with Papa watching, was hitching together a lot of little cars to make a train — that was Kelly’s. I went and looked into a deep dark corner behind the tree. Nothing. I touched Claude on the arm and started to say, “Wasn’t there any...?” but he was awfully busy. Then everybody was looking at me — looking sorry for me because they hadn’t got a thing. I was starting for the sitting room — I was crawling into my corner behind the coatline and there were my little dolls.

“Claude,” Mamma’s voice was saying strong and loud. “That box in the hall — did you bring that in?”

“No,” said Claude, “Was there another box?”

“It seems to me there was,” Mamma said.

I was up and out and into the long, black hallway even before Claude. What can this be, Claude wondered out loud. What can it be, I whispered inside me, seeing the box now, heaped high with packages.

Claude carried the big box as if it was terribly, terribly heavy, grunting; and groaning. He set it down in front of the tree. He took out a squashier package. It didn’t have a name — not that he could find — that anyone could find. So they opened it. It was a little cupboard — a sweet little cupboard with drawers — only half as big, I saw now, as the one by Ethel’s big doll. It could be — it had to be — for me! They opened a drawer — they took out a slip of paper. They took it over to the lamp — it took a long moment to make out what it said on the slip.

For V — Vernie!

I had my little cupboard in my arms, rocking back and forth on the floor. It was a belle mine! I did have to do a present for Christmas!

Didn’t they like it? They wanted to know. Oh, yes, I loved it — Then (continued on opposite page)

The Symbols of Christmas

Stockings hung by the fireplace... buoys of holly... a jolly little man in a red suit — no matter what your favorite Christmas symbol, you can be sure that it has a fascinating beginning.

There are several versions of the origin of one of our best loved holiday traditions — the Christmas tree — but perhaps the most unusual is an old German folk tale. A branch of fir was given to a forester’s family after they offered food and shelter to a waif, who was in reality the Christ Child. According to the legend, when the forester put the branch into the ground, it immediately sprouted fruit and nuts every Christmas.

While the fir has long been a Yuletide symbol, early Christmas trees bore no lights. Martin Luther began the custom of hanging candles around 1530. Walking in the forest one night, Luther became so impressed with the beauty of the stars twinkling among the trees, that he went home and hung candles on a small fir so that he might share the experience with his children.

Holly was once thought sacred by the ancients, who held that all evergreens were symbols of life. Holly was first hung in the windows of English homes as a symbol of Christian worship within. The plant also was believed to keep evil spirits away from the house. The red berries cant to represent the blood of Jesus, and since they become a symbol of well-being.

Ever wonder why we kiss under the mistletoe? Researchers at Austin Nichols & Company tell us that the ancient Druids believed mistletoe was given to the goddess of love, and to show that it was a symbol of love, every woman passing beneath it was supposed to kiss one kisses a two. A popular belief that a girl kissed under the mistletoe will be married within the year — providing she allow her love only as many kisses as there are berries!

The favorite Christmas symbol of most children, Santa Claus, was a real person. The original Saint Nicholas was a bishop who lived in Turkey (600 years ago). According to a popular legend, he once dropped a bag of gold coins down the chimney into a sock a poor girl had hung by the fireplace to dry. Santa Claus was brought to the New World by the Dutch settlers who called him Sinter Klaas, and he’s been coming in his bag of gifts each year at Christmas ever since.

When we give gifts to Christmastime, we’re observing a tradition that goes back to the time of the Wise Men, bringing gifts to the Christ Child. According to some authorities, Christmas gifts replaced a pagan custom of exchanging presents at the New Year. Early priests suggested that, instead, gifts be given to Christmas to symbolize the goodwill and generosity that are a part of the festive occasion.

Nothing for Christmas (cont.)

why was I crying? I didn’t know why I was crying when I was laughing too —
Someone gave me a package that was the size of a small book, but inside, was a set of dishes — just right for the little cupboard! Everything I got when Ethel and I got the same thing, was proportionately smaller. I loved the “ littleness” about the things, because J was littler. So I knew before I opened the long package, that it must be a doll. And it was. A very big doll, really, not only not so big as Ethel’s. But with real hair, too, and a joined-kind body, and go-to-sleep eyes.

What are you going to call her, they wanted to know.

“Heloise,” I said out of nowhere. “Heloise.” I pronounced it as it was spelled — as I must have heard it sometime — with two syllables. (Not for years was I to change the pronunciation to E-Lo-ise.) My cup was running over. Everyone had laid aside his own things to watch me open mine. I could, at this writing, name off my various childhood possessions, thinking they all were presents from that seemingly inexhaustible box. But some things must have been given me at other times — for there were other Christmas. Only one more, I am sure came from that box: the doll buggy that was just the right size for Heloise.

I suppose, now, one might question the psychology of putting a small child through such emotional stress. But I see more in it than that, now. I see the thoughtful planning — all aside from choosing the gifts on that pre-Christmas trip to town — to add to the surprise and capture of the excitement of opening the work of the three oldest — convincing to make Christmas a little more special and suspensive — just last a little longer.
En vies des ancien perses
La on sont belles matieres
Nous aimons d'un exemple;
Jo ne di me c'ali bel
N'ain on par maintes fois
Mais oll n'est pas ci en desfios
Ne face bien a raconter
Or vos vei dier et acconter
D'un menestrel que li avint

There is a charming story that was told often by our forefathers in years long gone by, concerning a certain professional tumbler and the Holy Saint Mary, Mother of Jesus. We certainly do not say that it is the greatest of all stories, but we think it to be a very nice one that deserves to be told.

The tumbler was a handsome young man whose time was very successfully occupied with his profession. His great accumulation of horses, robes, and money attested to his unusual cunning. He was not learned, however, in any of the liberal arts of his day.

As the years passed over him, he became aware of the superficiality of many of the hopes and desires men put into their hearts upon. His worldly success did not in any measure prevent him from divining a fate other than destiny and a world another than this. At last, when he could tolerate his earthly life longer, he gave all that he had to the poor and afflicted and applied for sanctuary at the Holy Order in Clayrere. Thus we are come upon again another thing: Man's first real quest of the promise of a morrow comes when he finds his soul and not when he loses his pure.

When he became a novice in the Order he found his orientation much more difficult that he had anticipated.

First of all, this tonsured group did not talk. He as- supposed, therefore, that they could not speak, and he felt sorry and prayed for them in his own way. Later, when he learned that they were not mute, but that their speech was sometimes forbidden as penance, there was little humor at his expense. Still more humor followed when he tried to conform for the first time in his life to the silent ablutions. His second period of confusion arose much later when he heard their lamentations.

translated from the medieval French poetry into a modern English story by Prof. Paul K. Hudson, Executive Secretary, HKEH. From A. Knighton, Head, Dept. of French, University of Illinois. Art by Gertrude Hudson.

"Holy Mary!", he said, "what is wrong with these people? Some great sadness must have come to them to make them so humble." But when he learned that they were praying for God's mercy and forgiveness, he said, "Dear Father, forgive me most of all. There is no one here so unhappy that he does not serve you with some occupation. Yet I can hear no stories, nor songs, neither laugh nor write. I am worthless to the Order and to my God. Oh Holy Mary, help me, beseech your sovereign Father that he send me and send good counsel, for I may learn to serve him. I am doing wrong in taking bread here without deserving it, but I do not wish to leave. Oh Holy Mary, help me, — help me, — ."

He grieved thus for many days. At last in the early dawn of an enchanted morning in May, when the chill of the winter was over, and springtime had fallen upon the land, he arose from a deep slumber. Guided by the wings of the morning, he explored some of the innermost recesses of the great church where he had never before gone. And, still guided by those unseen pinions of hope, he came upon a small crypt in which there was an altar and a semblance of the Virgin Mother. In deepest reverence he fell to his knees, and with eyes upward became attired by the divine loveliness of the Holy Mary. In a little while he was moved from his silent worship by the notes of the Angelus bell. He turned to see what was the cause of the commotion of his early grief had vanished. "Sweet Lady!", he said, "all will be saying their verses, but I in thy presence can say nothing sacred, and you will forgive me I will do the only thing I know how to do — I will serve God by displaying only the talent I have. Others will sing, and pray."

He removed his cape and laid it upon the altar, but kept on a light garment that would not hinder him. He fastened his belt and prepared himself. Then he turned back to the image, "Lovely Lady I command my body and my soul into your keeping. Do not despise me for what I am. I shall perform for you many acts."

Then he began to make all kinds of small ones and great ones — first farther away and then nearer — up and over, and jumped and did the marvelous Vault of Metz. Afterwards the French Trick and the Act of Champaign. Next the elaborate Britannia and the beautiful Lorraine. He danced on his hands and on his feet. As a grand finale he made a great vault that had no name. "Lady!", he said, "in the name of Our Father I never did that one before. It was no ordinary feat and is completely new in this world."

Then he beat his breast and wept tenderly for he knew of no other way to pray. "Sweet Mary!", he said, "I can do no more, but when all the prayer again I will return and be thy servant with this, the only gift I have."

He led this secretive life for a long time and was very happy. He was never more conscious of his deity than he was now during his daily performances. He searched only for the true love in men's hearts."

"Many of the monks noticed his unusual habits and re- proached him for not attending the daily services. Finally, one of them, or curiosity, followed him to the crypt and discovered his secret. "By my faith," said he, "this man is a fine artist. He performs as though he truly loves the Lord. There is not one, I believe, who would not rejoice to see this great gift displayed before God. It is his penance because he does it without evil intent."

The monk went straightway to the Abbot and told him everything. The Abbot sent up and said to the monk, "By your Holy Order I command you to say nothing of this to others. Come, we will go together and view this strange thing." They went quietly and hid near an altar in a recess of the crypt. They watched with great interest the marvelous service of the novice as he moved on his hands and feet, and bowed before Our Lady. He did not spare himself but continued on and on to the point of fainting. Finally, when completely exhausted, he fell down at the altar and did not move.

The Abbot became uneasy from the sudden fear that the Lord might be displeased with such a performance in a holy place. As he watched, the crypt soon became bathed in a dazzling white light. And a Lady, more beautiful than Truth, came down a giant staircase that seemed to open in the far wall. Never before had anyone seen a woman so lovely, so precious, or so richly dressed. With her were a host of angels and archangels from heaven above. They gathered about the tumbler to comfort and import the. The Sweet Lady fanned him with a white cloth. Then she supported his head on her arm and wiped away the tears from his eyes.

"And so I have, once and for all, come to understand."

For he could do no other thing, Than to tumble, dance, and spring. Leaping up, and down, and up. Our Lady knew, Nothing better could he do. He could not say her prayers by rule, Nor Peter Nester, nor a note. Not Ave Mary, nor the Creed, Nothing to help his Soul in need.
Christmas Decorations

It's no wonder that the recording "White Christmas" is the largest-selling record ever — children and adults always look forward to a Yuletide that is dressed in frosty white.

This Christmas, whether the skies are clear or heavy with snow clouds, you and your family can create your own Currier & Ives-type of snowy countryside.

This winsy Christmas scene, complete with Santa and jolly snowman, lets you give vent to your imagination. You'll need:

- Diamond Round Toothpicks — 2 or 3 boxes
- 10 — 15 paper towels
- Cotton batting
- Roll of aluminum foil
- Can of snow spray
- 5 marshmallows
- 13 gum drops
- Red, blue and green food coloring
- Toothpick box
- Navy blue crepe paper — one large sheet
- Tiny gold or silver stars
- Glue, paper, pen and ink, one index card
- Before you begin, fill a shallow bowl or a saucer with blue vegetable coloring, another one with green, and another with red. Let about one-third of the toothpicks soak in each, then dry them all on paper towels.
- On an old piece of board about two feet long and a foot wide, place some crumpled towels in mounds, moistening them slightly if necessary to keep them in place. Next, cover with aluminum foil, molding the foil over the shape of the towels to create hills and valleys. Some slightly moist cotton batting goes over the foil. Spray your little countryside with artificial snow, and you have the beginnings of a Currier & Ives-type snow scene.
- With some of the red-dyed toothpicks, build the walls of the log cabin by making a square on the snow; on top of this square place another square that you've glued together — and made sure the two square pieces are firmly glued. Continue this process until the sides of the building are as high as you want them.
- The roof is made by cutting an index card until it's a little wider than the distance between two walls. Fold the card in half and you can already see a two-sided roof taking shape. Paint the roof with glue, and place blue-dyed toothpicks side-by-side on it until it's covered; then glue the roof to the top of the building — and you have a log cabin ready to adorn the top of a snowy hill. Place a small chimney, fashioned from paper or a bit of lump sugar, on the roof — and it's a cozy cottage!
- The jolly snowman is easy to make; the only chore will be to stop the whole family from making so many that the snowmen will screen off the rest of the scene! Connect two marshmallows, one on top of the other, with toothpicks. Make each leg with a separate marshmallow, and fasten with toothpicks. Insert a toothpick half with a gumdrop on the end for arms, feet and cap, then create jovial eyes, mouth and nose with pen and ink.
- Santa's sled is made from one Diamond toothpick box from which the lid has been removed. A piece of toothpick is inserted through the box at each corner, and it then gets glued to a runner fashioned from two toothpicks glued together. In the dish filled with red vegetable coloring, dip a small square of cotton batting; this will serve as Santa's blanket.
- To make old Santa, himself, use half a marshmallow for the head.

Place the marshmallow piece on the end of a toothpick, and stick the toothpick into the bottom of the sled at an angle. Snuggle the blanket up to Santa's "neck" and it won't be necessary to make a body for him. His hat is a cone of red paper, and his hair and beard are white cotton batting. Features are made with pen and ink.

You can't have Santa without at least one of his faithful reindeer, and you can make them from gum drops. Connect four gum drops with toothpicks to form the body; a gum drop with six bits of toothpick make the head; one toothpick with a gum drop on the end for each foot completes Donner — or is it Blitzen? Reins for the reindeer are made of two toothpicks glued together.

To add reality to your scene, fashion trees and shrubbery from the green-dyed toothpicks. Two of them glued together make the trunk of a fir tree, while branches are made by placing larger and larger bits of toothpick — going from top of the tree to bottom — until you have a majestic Christmas tree. As a final touch, place a piece of dark blue crepe paper behind the scene for background, and adorn the "sky" with tiny gold or silver stars (the kind that can be bought in any five-and-ten-cent store). Spray the whole project lightly with snow.

And then you and your family can sit back and sing a mellow tune of Christmas expectation: "I'm dreaming of a white Christmas . . . ."

Micro-electronics are being applied at a vastly expanding rate in products manufactured at the RCA Victor Home Instruments Division. This engineer is using sophisticated test equipment to examine the performance characteristics of an integrated circuit in our development laboratories.
The new National President is Dr. William Smith (top right). He received the BSEE degree with distinction in 1936 and the M.S. in E.E. degree in 1937 from the University of Minnesota. From 1936 to 1937 he was a teaching fellow in the Electrical Engineering Department at the University of Minnesota. He was initiated into Omicron Chapter of Eta Kappa Nu in 1934.

After leaving Minnesota he was associated with the Commonwealth Edison Company of Chicago. In 1941 he was called to active duty in the Naval Reserve and served throughout World War II at the Inspector of Naval Materiel Office in Schenectady, New York. He presently holds the rank of Captain USNR.

From 1946 until 1948 he was Dean of Pre-Engineering at Sampson College, Associated Colleges of Upper New York. He was at the University of Texas from 1948 until 1950 and received the Ph.D. from the University of Texas in 1950. He has been at the University of Kansas since 1950, Chairman of the Electrical Engineering Department since 1955, and Dean of Engineering since 1956.

He has been active on research projects for the Office of Naval Research, the Signal Corps, and the Army Engineers. He also has served as consultant for a number of industrial organizations. He has presented papers to the AIEE and ASEE. In 1962 he served as consultant on Engineering Education in Bogota and Cali, Colombia.

Mr. John E. Farley, new National Vice-President (top left) is district plant manager for Illinois Bell Telephone Company; but in his spare time, he has always been a Lake Michigan sailor. He owns a power boat but crew in sailboat races as often as possible.

Jack joined the Engineering Department of Illinois Bell Telephone Company in 1948 and worked with television and mobile radio systems. He has had a rather interesting and extensive career in the Bell system. He was at Bell Telephone Laboratories twice. In 1955 he worked at Bell Laboratories on the development of the first completely transistorized communication receiver in the VHF region.

During the 1958-60 time period, Jack was at Western Electric Company's Defense Project Division heading a group coordinating the solution of computer equipment and program problems connected with the SAGE system of the U.S. Air Force. In 1960 he returned to Illinois Bell in their newly formed Marketing Department as district marketing manager. In 1963 he was appointed special services engineer. At present, Jack is district plant manager of the Direct Distance Dialing and Data Service Bureau.

Jack became a member of Alpha Eta Chapter at the University of Illinois, where he received his BSEE in 1948. He received his Master of Science from Northwestern in 1955.

The Far Western Region will be represented by Dr. Donald Thorn (left center). He received the B.S.E.E. degree from Texas A & M College. His M.S.E.E. and Ph. D. were both received from the University of Texas. In 1952 he served as a Lieutenant in the Signal Corps Engineering Laboratory at Redstone Arsenal, Alabama. From 1953-58 he was on the faculty of the University of Texas and then became Professor of Electrical Engineering at the University of New Mexico. He has just accepted the position of Head of the Electrical Engineering Department at the University of Akron.

The new Director for the East Central Region is Prof. Robert Schindler (right center). He was born in Cleveland, Ohio, October 28, 1906. Interested in radio during its infancy and encouraged by his high school physics teacher, he decided to become a scientist. After one year at John Carroll University he changed his objective to engineering and transferred to Case School of Applied Science, now Case Institute of Technology, where he received a B.S. in E.E. in 1930 and an M.S. in E.E. in 1932.

At various times Professor Schindler has worked as an engineer at the Firestone Tire and Rubber Company, RCA, and the Brush Development Company. His teaching career began at Case in 1937 and in 1941 he moved to Fenn College, now the Cleveland State University. In 1953 he became Professor of Electrical Engineering and since 1956 has been Chairman of the Electrical Engineering Department.

Elected to represent the West Central Region is Dr. Gerald Dreifke (bottom left). Prof. Dreifke received the B.S.E.E., M.S. and D. Sc. degrees from Washington University. He was a Design Engineer for Curtis-Wright Corp., a consulting engineer to several companies, and a Member of the Technical Staff of Bell Telephone Laboratories. In 1948 he became a teacher at St. Louis University and is now Chairman of the Electrical Engineering Department and Graduate Program in Electrical Engineering. He has been a member of the Electrical Examiner Board of St. Louis County, and of the Governor's Science Advisory Committee of Missouri.

Dr. Charles E. Hutchinson is the new Director for the Eastern Region (bottom right). He received a Bachelor of Science degree in electrical engineering from Illinois Institute of Technology in 1927. From 1927 to 1960 he served as a commissioned officer in the U.S. Navy. After returning to graduate work at Stanford University, Dr. Hutchinson obtained a Master of Science degree in electrical engineering in 1961 and his doctorate in 1963. While at Stanford he was responsible for analog and digital simulation in the Systems Theory Laboratory.

Since September of 1965, Dr. Hutchinson has held the appointment of Associate Professor in Electrical Engineering at the University of Massachusetts, Amherst, Massachusetts, where he conducts undergraduate courses in linear circuit analysis, and graduate courses in optimum control theory and random signal theory.
**NEW CHAPTERS AT Princeton University**

Eta Kappa Nu was pleased to establish a Chapter at Princeton University on May 11, 1967 and takes particular pride upon becoming the third honor society on the campus at Princeton, being preceded only by Phi Beta Kappa and Sigma Xi.

Prior to the initiation, the visitors were treated to a tour of the beautiful new quadrangle building of the School of Engineering and Applied Science, by Howard H. Sheppard, a past national president of the honor society. Richard J. Jagaciński, a junior member from Whippany, N. J., was elected first president, for the academic year beginning next September.

Highlight of the ceremony was presentation of the local chapter's charter to Dr. Joseph C. Elgin, Dean of the School of Engineering and Applied Science, by Howard H. Sheppard, past national president of the honor society. Richard J. Jagaciński, a junior member from Whippany, N. J., was elected first president, for the academic year beginning next September.


Following the chapter installation and dinner at the Princeton Inn, the group heard an address by Dr. Morton H. Lewin of RCA Laboratories, a Princeton resident who won the Eta Kappa Nu Award of Recognition as the 1966 "Outstanding Electrical Engineer." Dr. Lewin holds bachelor's, master's and doctoral degrees from Princeton.

A number of prominent and active HKN Members attended the installation including the Presidents of New York and Philadelphia Alumni Chapters, plus several Presidents and faculty advisors from four HKN Chapters.

The installation team consisted of the following: WHEATSTONE — Howard H. Sheppard, National President 1963-66, FAIPADAY — President for the Philadelphia Chapter; COULOMB — S. Reid Warren, Jr., National President 1956-57 and representing the Lambda Chapter; OHM — William Hodson, (continued on page 24)

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**GAMMA: The Ohio State University**

In early February, sixteen members toured IBM's Research and Development facilities in Endecott and Glendale, New York. On May 3, the spring planting meeting consisted of a tour through the IBM Research and Development facilities in Endecott and Glendale, New York. On May 3, the spring planting meeting consisted of a tour through F. W. Bell Inc., the major developer and producer of Hall Effect devices, in Columbus, Ohio. Pledge activities were centered around making the annual pilgrimage to the Greenbrier to meet Professor George. Twenty-two new members were inducted.

At the end of the term, the chapter will present its Outstanding Sophomore Award to the sophomore electrical engineering student who has achieved the highest academic excellence during his first two years in college.

**LAMBDA, University of Pennsylvania**

The activities of Lambda Chapter this year were of both a social and service nature. The annual initiation-banquet in the Fall held jointly with the chapters of Villanova University and Drexel Institute of Technology and a Spring Picnic for members of both the engineering honor societies at Penn were well-received by all. In the category of service functions, tours and exhibits were arranged for high school students invited to Engineers' Day. The tutoring program for electrical engineering students, started a year ago, was continued. Also, in the Fall Lambda Chapter's Sophomore of the Year Award was presented to one of the outstanding sophomore students. A special excellence and high character exhibited in work and conduct. Selection of the student for this award was made by a group of experienced engineering members and officers. The Lambda Chapter also sponsored several social functions and participated in other activities of the University.

**BETA PSI, University of Nebraska**

On March 23 Beta Psi Chapter initiated 13 undergraduate members into membership at the annual spring banquet. Our guest speaker, Dr. Don J. Nelson, gave a very interesting talk in which he related the exciting history of his profession in the computer industry. The chapter is actively supporting the electrical engineering departments in Engineering Week activities to be held the week of April 23. In addition to contributing money to the general fund for 'Engineering Week', several undergraduate students are helping on construction of a computer display.

**BETA GAMMA, Clarkson College**

Has been quite active during the past semester. We initiated two new undergraduate members, two graduate members and one new faculty member. We now have a staff of ten. "We're all proud of the work we've done this year," said Mr. John A. Saladino, our treasurer, we conducted a book sale, selling review books to sophomores and juniors in Electrical Engineering courses. This was a successful venture. We also set up several displays for prospective students at the various college fairs this year. Our chapter was invited to the annual dinner held at the hotel, but we were not present due to meetings and travel in the area.

**GAMMA ZETA Chapter, Michigan State University**

Is proud of its accomplishments again this year. We have tried to provide programs that would appeal to all students of electrical engineering. We are happy to report that our efforts have been well-received and appreciated. Some of the activities we have had this year included a series of educational sessions on Michigan State University's Engineering Program. We also held a series of educational sessions on Michigan State University's Engineering Program.

**GAMMA XI, University of Maryland**

A new annual award recognizing outstanding undergraduate and graduate students in Electrical Engineering was initiated by the Gamma XI Chapter. It consists of a large blue, high value, high wattage resistor mounted on a ma-

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**Left to Right:** James Carlock, Thomas Brower, Gary Lockhart, David Durand, Jerry Deeter, Joe Dunn, Robert McMillon, James Ferguson, Jon McDonnell, Charles Winton, Edward Ingram, Diane M. Dowling, Gary Green, Thomas Hummel, Wayne Watkins, Richard Cady, Dr. Albert Duke, James Harwell, and Professor Donald Box.

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**Left to Right (Standing):** President Everett Derryberry and Professor Paul B. Jacob, Jr., Installing Officer. The Epsilon Chapter of Eta Kappa Nu was installed at Tennessee Technological University, Cookeville, Tennessee, on May 12, 1967.

Thirteen undergraduates, four graduate students, and two faculty members were initiated. The initiation ceremonies were conducted by Dr. S. G. Lele, faculty advisor to this chapter. He was assisted by Dr. C. O. Alford, director of the Electrical Engineering Department.

The following initiation ceremonies, a banquet was held at the B & B Restaurant. Professor Paul B. Jacob, Jr., of the Mississippi State University chapter presented the charter of the Epsilon Rho Chapter to President Everett Derryberry. Among the guests at the banquet were Mrs. Derryberry, Dr. Wallace S. Prescott, Dean of Faculties, Professor James S. Brown, Dean of Engineering, Dr. James A. Wattenberg, guest speaker, and Professor and Mrs. Richard D. Bourne of Vanderbilt University.
CHRISTMAS IN 1885 by Eva Derby —

Yesterday my granddaughter-in-law said to me, "Grandma, you are 88 years old now and we are wondering what Christmas holidays and winters were like 90 years ago." This is how it was:

All five of the children were whistling and asking "Is there a real Santa Claus?" Our parents had brought us a small farm and we knew the load of fat hogs and drove of turkeys had been sold to make payments on it and we felt sure they couldn't afford to buy toys at Christmas for all five of us. Yes, there must be a Santa.

Our big apple tree hole was opened and a basket of apples and pears and a few pumpkins were brought out. They had been buried to keep from freezing. The apples had been peeled and cooked over a slow wood fire and each member of the family took turns stirring the long-handled paddle with big holes in it to make our cider applebutter for the winter.

That Christmas in 1885 the snow was drifted high on the hedge fences. We were going to the schoolhouse one mile away for our school program on Christmas Eve. One of the neighbors had a string of real sleigh bells — so my father put them on the dappled grey horses, piled straw into the big bob sleigh with comforts over us. The neighbors all climbed in and away we went to the school program.

When our songs and recitations were over — sure enough — in bounded old Santa Claus with jingling bells and gifts for all. Our mother — no — she was not there. She was at one of the neighbors helping to deliver another baby. This was all very mysterious, but real to us. It reminded us of the Christ-child who was born so many years ago.

(Next Column)

DEER

Desert travelers never show a blush, but Herr Janni does rig a blanket in one corner of the great room and the area behind this blanket is as neat and immaculate as at a monk’s cell.

Not so the rest of the room. We have to organize for the next leg of our trip. We have learned something about desert travel and we think we now know how to fit a load together so that the one thing most needed, like the salt or the can-opener, is not under half a ton of stuff we won’t need until we get to Zouar. The cars are completely emptied and the men are servicing them. Contents are stacked and strewn about our camping areas. In addition we have acquired an impressive quantity of laundry and this is strung across the courtyard and zig-zagging on plastic lines about the room. We would like a decent place to hang this, but the adobe adobe has a certain charm in that rabbits are kept in it, and pigeons soar soothingly from its roof. It is fenced off from the rest of the courtyard with a garden gate. Catherine says that the found Archie leaning on the gate early morning talking to the rabbits. He opened the gate for her without batting an eye and went away whistling.

Herr Janni, we learn, is on vacation from his job in an American library in Berlin. He goes out all day with his binoculars to study bird migrations. He says that the daytime fliers drop like stones on the ground in the early morning and he has seen the flocks of white storks on its way to South Africa. He also studies the meteorological conditions here and in the early morning, before the rest of us are awake, he goes out to whirl his bygones. He was a member of a German air force in Nambia Africa and since then has returned several times to Libya on scientific expeditions. He has accepted our invitation into his domain with receptivity and we have been happily surprised to find that he has a hand-out backing him, pioneering on a shoestring—bird—watching in the Sahara, not knowing any more than his brother birds do whether or not he is going to get out of the plane. He is trying with the help of an Arab friend, to make arrangements to hire a camel caravan to take him to the Sudan.

The long-waited wireless message has been received. It is from Kuba! It reports that last night, 5/2, one of the planes we are expecting will come, via Benghaz, it asks how many drums of aviation petrol are on hand at the Kuba airport and while we were kindly asked that all jubba-rolls are on the runway are filled in.

Livi went out to count the drums and check on the rat-holes. There were a few drums left of the Kura's numerous explosions and twenty years of nature's sand-blasting, contains five separate drums of petrol and oil. None bore any markings, but presently an old man shuffled up from somewhere and pointed out the drums that belong to the R.A.F. He said that the rat-holes are few and small as it has been a bad year. There are only about thirty drums, but counting them took a good half hour, which we found time to scratch over the top of the stack, thumping alternately with his elbow and palms, while he chanted out a sort of counting litany. Livi counted twenty-weight, while the old man came up with two, six. The next time round, Livi got twenty-six and the old man twenty-five. In the next count Livi got twenty-nine, but by now the old man had got the idea and Livi thought he might have included the old boy in his count. They settled on twenty-five. Once back in the village, the old man told Livi that
If you think oceanography at Westinghouse
is a dry subject,
you may be all wet.

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seas Division takes to the water now
and then. Like these engineers at
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What is there left for you to discover?

Cyrus the Great, King of Persia, built a communications system across his empire some six centuries before the Christian Era. On each of a series of towers he posted a strong-voiced man with a megaphone. By the 17th century, even a giant megaphone built for England’s King Charles II could project a man’s voice no further than two miles. This same king granted Pennsylvania to Admiral William Penn as a reward for developing a fast, comprehensive communications system — ship-to-ship by signal flags.

We waited for the combined theories of Maxwell, Hertz, Marconi and Morse before men could transmit their thoughts by wireless, though only in code. Only after Bell patented his telephone and DeForest designed his audion tube could men actually talk with each other long-distance. Today nations speak face-to-face via satellite. Laser-beam transmission is just around the corner. Yet man still needs better ways to communicate across international boundaries.

In a world that has conquered distance, in a world whose destiny could hinge on seconds, man is totally dependent on the means which carry his voice and thought. It is this means that we in Western Electric, indeed the entire Bell System, have worked on together since 1882.

Our specialty at Western Electric is the manufacture and installation of dependable, low-cost communications systems for both today and tomorrow. And to meet tomorrow’s needs, we will need fresh new ideas. Your ideas. There is still much for you to discover right here at Western Electric.