

Tech Scores First Televised RF

14 Lloydmen Stun NBC Audience

Credit for the best executed Caltech stunt in a couple of years goes to a few Lloyd House members — 14 to be exact — who gave up their New Year's eve fun time to labor diligently over the 2232 cards that were used in the stunt.

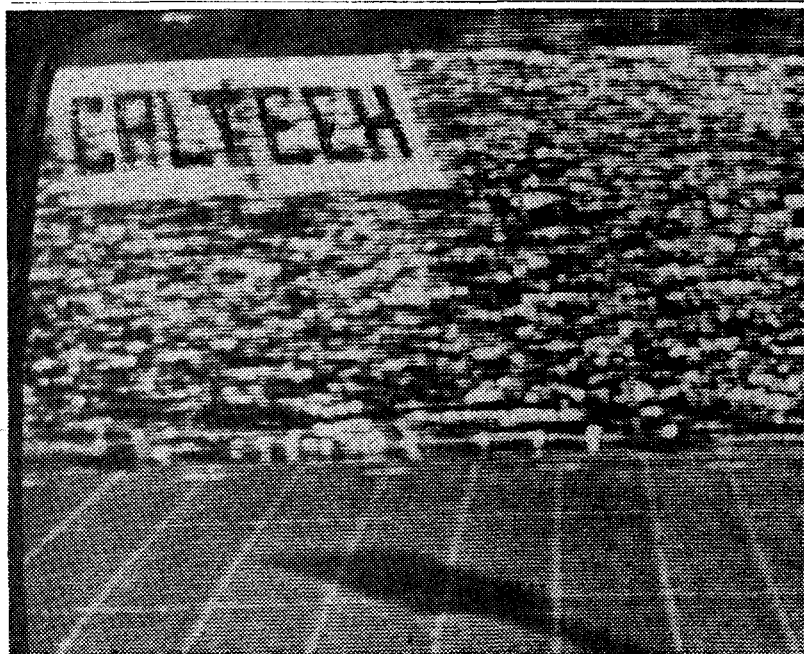
The University of Washington card tricks numbers 10, 11 and 12 that spelled out "Caltech," "Huskies" in reverse, and depicted a beaver in place of the Washington mascot stole the half-time show at this year's Rose Bowl game.

The stunt — or stunt stunt — while not original in basic ideas, has never before made nationwide TV.

Sometime shortly before Christmas, the idea to pull the card stunt occurred to the shift-minded Tech men. A few accurately placed phone calls ascertained the fact that the University of Washington band would arrive December 29, the Minnesota band the same day, to stay at Long Beach State and Occidental, respectively.

Shortly after their arrival (about 15 minutes) a reporter from Dorsey High School Dorseygram dropped into the Long Beach dormitory and asked to see the card-stunt director, and found him in room 105 — fortunately located only two doors

Dr. Beadle To Head U of Chicago



First of the three card stunts inserted by Lloyd House pranksters into the Washington card stunt routine which took place at the half-time of the 1961 Rose Bowl game. This photo was taken from a nationwide TV hookup.

from an easily picked entrance. Pencil in hand the reporter (Techman incognito) soon had all the facts copied down, discovered the location of the master sheets, the 2232 cards, and how the stunts worked. They returned at a later time (about an hour later) for another talk, but the director was at dinner, unfortunately—so they took one card from the middle of the heap. ("He'd never miss one," said the lockpicker.)

Down to the printers they

went, card in hand, and shortly there appeared 2300 near duplicates. Attempting to dye the cards to match the tattered and worn Washington real ones failed, so they scrapped the program, hoped instead the new manila replacements would pass for the old tattered and yellowed white cards. Time: Friday, Dec. 30

The next day, Saturday, the interviewers failed again to arrive at the dorms the same time the band was there—since they

(Continued on Page 2)

DuBridge Calls Nobel Laureate Great Educator, 'Irreplaceable'

Dr. George Beadle, Dean of Faculty, will leave Caltech late this term to become Chancellor of the University of Chicago. No names have been mentioned as yet to succeed him as Dean or as Chairman of the Biology division.

In accepting the leadership of the University of Chicago, Beadle assured Caltech that he was "grateful to have been here and to have had a small part in its growth during these past 14 years."

"Leaving it is painful," he remarked. "Caltech is a wonderful place."

Looking ahead, he continued: "Chicago is a great institution, too, one with a long history of educational leadership. Its future is exciting to contemplate, and I am looking forward with enthusiasm to making whatever contribution I can."

Beadle is credited with making revolutionary discoveries on the role of the gene in biology for which he has won a Nobel Prize and this year been selected by Fortune magazine as one of the country's 10 top biologists and by Time magazine as one of the scientists to receive the magazine's "Men of the Year" award.

His first discovery in 1935 was that a gene controls the eye color of the fruit fly by producing a particular chemical substance.

Then in 1951 at Stanford University, together with Dr. Edward L. Tatum, now of the Rockefeller Institute, Dr. Beadle found that the genes control the synthesis of vitamins and amino acids. Scientists say that this clarified whole areas of biology and opened rich new fields for investigation.

"It led to a new knowledge of the genes and of biochemistry," said Dr. Norman Horowitz, Caltech biology professor who has been associated with Dr. Beadle since 1952. "It made possible for the first time the study of the genetics of bacteria. And it led to the application in several laboratories of the genetic principles to increase four-fold the production of penicillin during World War II."

Beadle is chairman of the American Cancer Society's Scientific Advisory Council and chairman of the National Academy of Science's Committee on the Genetic Effects of Atomic Radiation.

He has received many honorary degrees for his work in genetics, including those from Yale University, his alma mater, the University of Nebraska, and Northwestern University. He has received the American Public Health Association's Lasker Award for outstanding work in public health, also the Emil Christian Hansen Prize from Denmark.

He is a member of many scientific societies, including the National Academy of Sciences, the Royal Danish Academy of Sciences and the American Philosophical Society.

Best Wishes

The University of Chicago is to be sincerely congratulated on securing as its leader so great a scholar, teacher, and administrator as George W. Beadle. Under his leadership the University of Chicago, already one of the nation's great educational institutions, is certain to attain new heights of educational distinction. The whole nation will profit from such a development.

At the same time, the loss of Dr. Beadle is a most serious blow to Caltech. In the past fourteen years he has built here one of the greatest research centers in biological science in the country, and he has brought distinction to the entire Institute. In his new capacity as Dean of the Faculty he was about to launch a vigorous new program of educational advancement. He cannot be replaced.

Dr. and Mrs. Beadle were beloved members of the Caltech faculty and they carry with them into their new endeavors the best wishes of a host of friends and admirers in Southern California.

—L. A. DuBridge

Opens Next Year

Work To Start On Winnett Center

BY CLEVE MOLER

That big bare piece of campus west of the new Student Houses will not be bare very long. Final plans for the new Winnett Student Center are being completed and construction will probably begin later on in the term.

Winnett Center, which will occupy the area that formerly boasted the Old Dorm, Throop Club and the Original Greasy, was donated by P. G. Winnett, chairman of the board of Bullock's, Inc., and a long-time member of the Caltech Board of Trustees.

The Center will be one of the final buildings to be built under the Institute's three-year-old development campaign. Seven buildings have already been completed, seven more are in various stages of construction and three — Winnett Center, Beckman Auditorium and Millikan Memorial Library — are still on the drawing board.

Scheduled for completion in a little over a year, the Center will include a large lounge, offices for student groups and organizations, a new bookstore, and student shop and recreational facilities.

The basement of the new

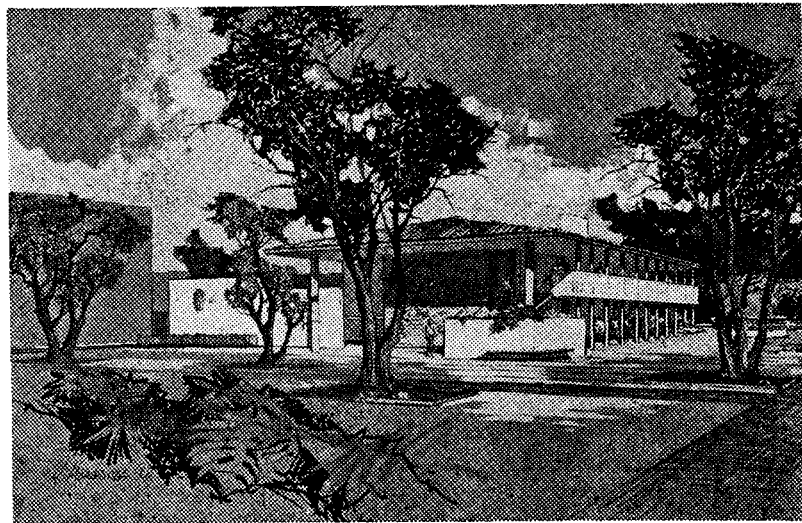
building will contain the wood-working, metal, electrical and paint shops and a fairly large game room with pool, ping pong, card and other equipment.

On the ground floor of the air-conditioned structure will be a large lounge and the offices and darkrooms for the California Tech and Big T. Also on the ground floor will be a greatly expanded version of the bookstore and permanent quarters for the new traveling barber shop. The new bookstore will be organized on a self-service

basis.

The second floor of Winnett Center will include offices and meeting rooms for ASCIT, the radio club, the Inter-Nations Association and other student clubs. There will be a large, general purpose meeting room and storage space for club use.

Caltech's YMCA will also find a permanent home on the second floor of the Center. There will be a combined Y-ASCIT work room with mimeograph and ditto facilities.



Artist's rendering of the proposed exterior for the Winnett Student Center. The horizontal sidewalk is the Olive Walk.

IHC Initiates Rotation Talks

The IHC is studying the pros and cons of rotation to aid their decision on its advisability for next year.

Their first step will be an informal poll in each House. The House presidents will sample student opinion on the subject at a meal this week.

In addition, faculty and administration members will be invited to the weekly IHC meetings to offer their ideas.

To facilitate discussion, the IHC plans to organize the subject matter of each meeting in advance. The committee should make their decision in five or six weeks.

BOD Plans To Fill Vacancies

There are now two vacancies on the BOD. Any student interested in the office of Athletic Manager or Representative at Large should corner any member of the BOD.

Washington Baffled By Prank

(Continued from page 1)

knew the band was at Disneyland — so they borrowed the master plans. The master plans are large pieces of graph paper colored in the way the stunts appear, and they were stored in the same satchel that the stunt-director kept his cigarettes. ("Sweaty," as one man put it.)

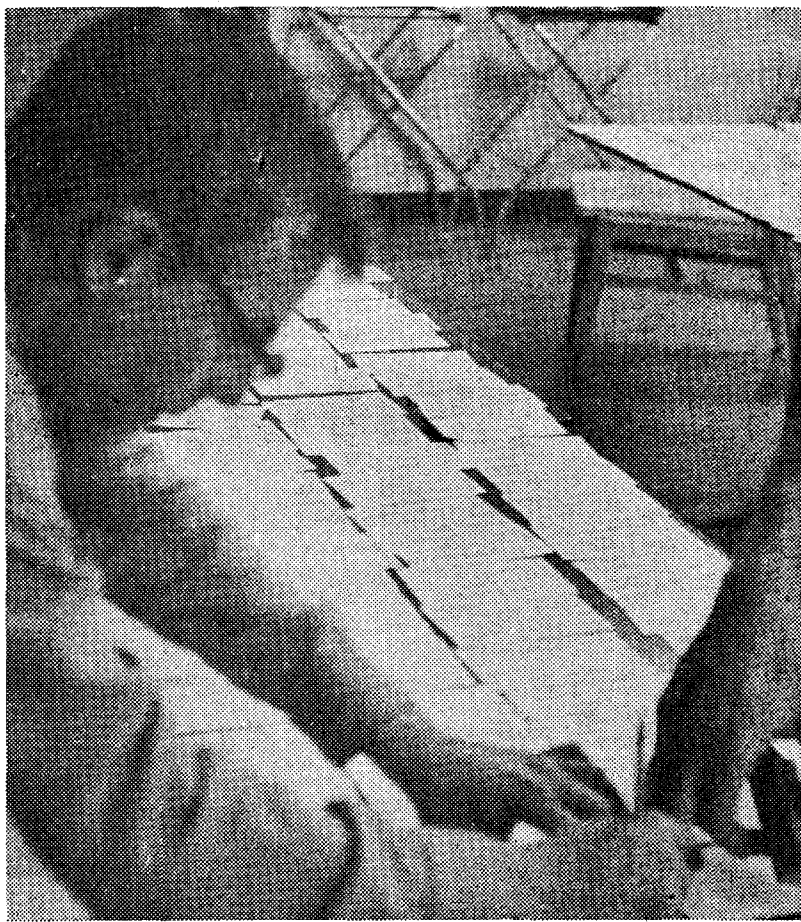
Escaping to the sanctuary of Lloyd House, the villains spread 2232 new cards on the Lloyd House dining room tables, and set about stamping them with the "correct" instructions — you realize by now three stunts were wrong before. Fourteen guys and 10 hours later, the project finished, five men and 2232 cards left for Long Beach.

Knowing the band was celebrating New Year's elsewhere made it a cinch to insert the correct cards for the old and erroneous ones. Then it was back to Tech for a day and a half wait.

IT WORKED

There is no way of knowing if the trick was discovered by Washington ahead of time, and even if they had, there would have been no time for them to find the "mistakes" and right them. Appearances are that they discovered the thing until it was on the air, because the stunt director was seen calmly riding in the Rose Bowl parade the morning of the game.

Out of 14 tricks the panksters (bless their '61 pea pickin' hearts) picked numbers 10, 11



2232 Cards—yep, count 'em—a portion of which are being stamped with "corrected" instructions before their use in Rose Bowl half-time activities.

and 12. Had they picked 13 or 14, they would have lost, since these were optional and were not done.

Ed. Note — RF (for Royal Flush) is a contemporary college colloquialism for a clever prank.

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Disarmament Talks Slated

The Carnegie Series for the second term will continue as it did during the first term. Speakers who are planned for this term are:

Thursday, January 5, 1:00 p.m.—Dabney Lounge. Professor C. E. Osgood, "Psychological Aspects of Policy Formation."

Friday, January 13, 1:00 p.m.—Dabney Lounge. Professor Jerome B. Wiesner (to be announced).

Wednesday, January 18, 8:15 p.m.—Culbertson Hall. Professor Tom Schelling, "Arms Control and Military Strategy."

Wednesday, January 25, 8:15 p.m.—Culbertson Hall. John Etrachey, "British Attitudes to the Deterrent."

Thursday, February 2, 1:00 p.m.—Dabney Lounge. Dr. Leo Szilard (asked).

Friday, February 10, 1:00 p.m.—Dabney Lounge. Professor Kenneth Boulding, "Conflict Resolution."

Thursday, February 16, 1:00 p.m.—Dabney Lounge. Mr. Denis Healey (House of Commons), "NATO Strategy and Arms Control."

Thursday, February 23, 1:00 p.m.—Dabney Lounge. Professor Daniel Lerner, "European Defense Attitude."

Thursday, March 2, 1:00 p.m.—Dabney Lounge. Professor Itiel de la Sola Pool, "Public Opinion and Policy."

Wednesday, March 8, 8:15 p.m.—Culbertson Hall. Erich Fromm (asked).

Wednesday, March 15, 8:15 p.m.

Pauling, Beadle Named As Time 'Men of The Year'

Dr. Linus Pauling and Dr. George Beadle, Caltech professors, and Dr. Donald Glaser and Dr. William Shockley, who studied at Caltech, are among the 15 scientists named as Men of the Year by Time Magazine.

The article outlined the major developments in science during 1960. Included in this were Caltech's work on DNA and in radio astronomy.

Beadle received his Nobel Prize for his work in genetics; Pauling for his work on the chemical bond. Glaser invented a bubble chamber for photographing atomic particles; Shockley invented the transistor.

Pauling and Beadle were mentioned as having done significant work on DNA and proteins. Both of them commented on the significance of the work on DNA.

Dr. Murray Gell-Mann, not named as one of the select 15, nevertheless was called "one of the brightest new stars of U.S. science." There was a short quote by Gell-Mann on the work of physics.

A few paragraphs were devoted to the aims of radio astronomy, but no mention was made that Caltech was largely responsible for many of the achievements listed. Palomar was mentioned, however, for the photographing of two colliding galaxies six billion light years from the earth.

—Culbertson Hall. Professor I. I. Rabi and Sir Solly Zuckerman, "Science and Public Policy."

PIONEERING IN SPACE RESEARCH VIA SPACECRAFT

PLAN YOUR FUTURE WITH THE LEADER IN SPACE SCIENCE

Since the beginning of his intellectual awareness, Man has looked upward to the outer void surrounding his planet Earth. He has watched the twinkling stars and wondered at the never-ending dance of the planets around the Sun. He has dreamed and written of the possibility of exploring outer space and speculated endlessly on what he might find could he but explore those silent spheres.

A practical beginning to these century long yearnings has already been accomplished with man-made satellites already girdling the Earth. Now, the next stage is under way—the daring attempt to explore the Moon and the planets of our Solar System and their environments.

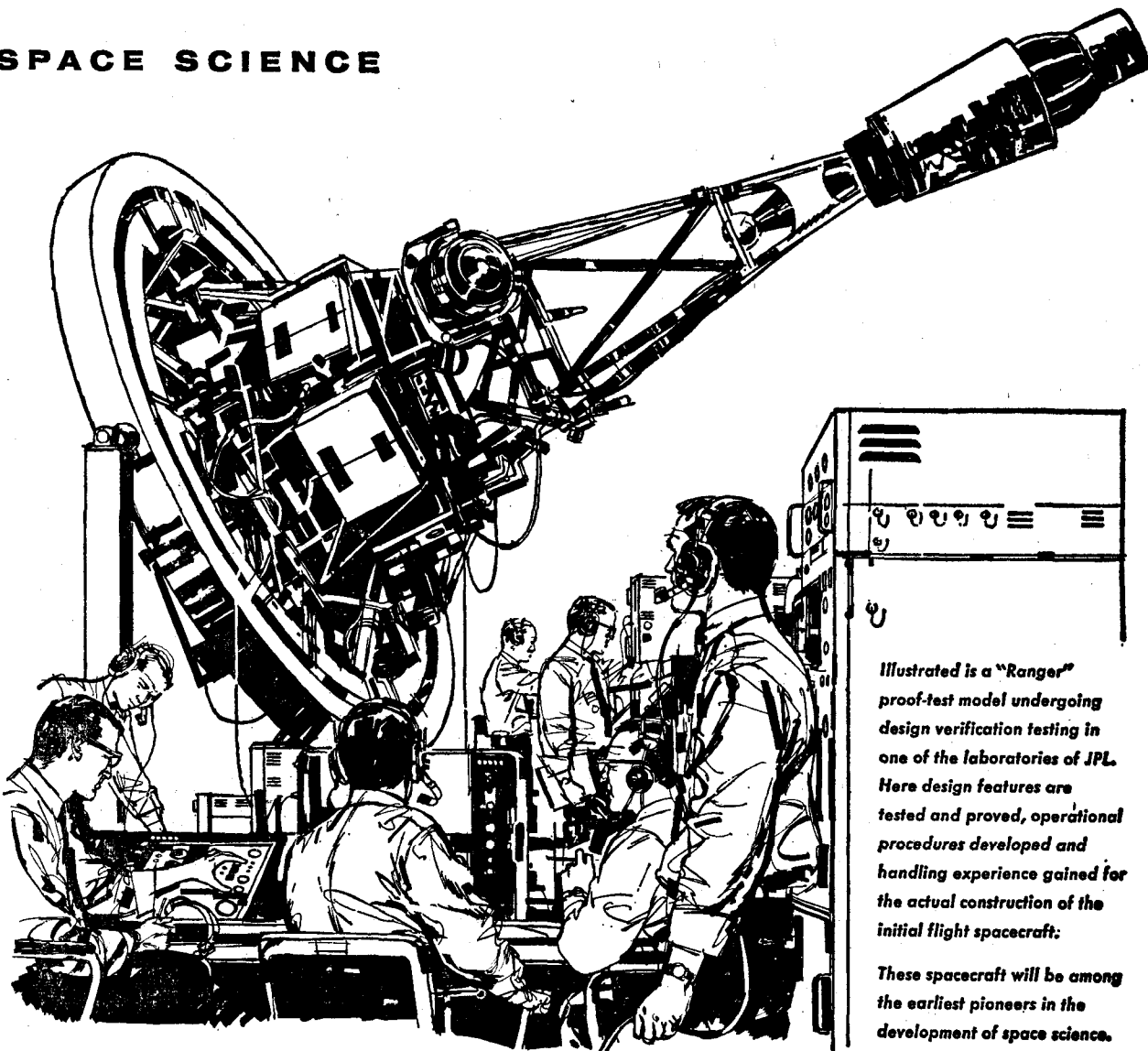
The National Aeronautics and Space Administration has assigned Caltech's Jet Propulsion Laboratory (JPL) the responsibility for the Nation's program of unmanned lunar, planetary, and interplanetary exploration. The objectives of this program are to contribute to mankind's fundamental knowledge of space and the space environment and to the development of the technology of space exploration. For the next ten years, as larger booster vehicles become available, spacecraft with ever-increasing scientific instrument payloads will be developed.

JPL will conduct the missions, utilizing these spacecraft to orbit and land on the Moon, to probe interplanetary space, and to orbit and land on the near and far planets.

Earliest of these spacecraft will be the "Ranger" series now being designed, developed and tested at JPL. The mission of this particular series will include first, exploration of the environment and later the landing of instrument capsules on the Moon.

Subsequent steps will continue a constant probing for the knowledge of what is beyond and will require all the skills, ingenuity, courage, endurance, perception and imagination that men can bring to the task.

Never before has such a wide vista of opportunity, or a greater incentive been open to men trained in all fields of modern science and engineering. Every day at JPL new problems arise, new theories are advanced, new methods tried, new materials used, and new principles discovered. Wouldn't you like to be part of this exciting activity?



Illustrated is a "Ranger" proof-test model undergoing design verification testing in one of the laboratories of JPL. Here design features are tested and proved, operational procedures developed and handling experience gained for the actual construction of the initial flight spacecraft.

These spacecraft will be among the earliest pioneers in the development of space science.



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ON CAMPUS INTERVIEWS

JANUARY 20

Surprise**Campus Secretaries Find Their Bosses Faultless**

BY BILL MEISEL

With just the right amount of charm, good humor, and versatility a dedicated band of Caltech secretaries forms the backbone of Institute administration.

Perhaps the secretary best known to the students is Ned Hale, due to the recent scandal on Interhouse night. Bravely facing up to her humiliation (she's from Boston), she boldly admits her hobbies are "swimming, dancing, reading, and blackjack."

Mrs. Hale insists her boss, Bob Huttenback, is "perfect," and she is a qualified judge of Masters of Student Houses — she has worked for six of them. The first she worked for was Colonel Goldsworthy in 1947. Her sincere admiration of Dr. Huttenback was most apparent in the touch of pride in her voice every time she said "my boss."

One might summarize her life briefly: she came to California in 1921, went to Hollywood High, got interested in George W. Hale, and ended up with 10 grandchildren and the "most interesting job" at Caltech.

Mrs. Geraldine Cranmer, secretary to Dr. George W. Beadle, might disagree with Mrs. Hale, since she is sure that Dr. Beadle is "the best boss on campus."

Since Mrs. Cranmer is secretary to the chairman of the Biology Department, she finds she must handle many strange calls, letters and visitors. Various public-minded citizens call in to explain their cure for cancer, to ask for medical advice, or to donate their body to science. One caller complained, "I have termites — what should I do?" from time to time, old men will come in with a huge briefcase full of their life's work, and Mrs. Cranmer will reluctantly "ease them out the door." Often visitors bring in things they found in their back yard and ask what they are. These range from huge spiders to unusual-looking eggs (around Easter).

But more commonly she finds her job consists of the usual chores, heckling absent-minded professors, and reminding her boss of speaking dates. "If I didn't have them on my calendar, I wouldn't remember and he wouldn't get there."

Everyone should know the woman who typed up the Strong problems. Her name is Betty Pond, and her job is two-fold: she is secretary to both Dean Strong and Dean Eaton. Of course, both her bosses are "marvelous."

She readily admits that she knows nothing about physics and gets most of her science from science fiction. The funniest thing in the office, according to Miss Pond, is to see a Caltech student waiting for an appointment and laughing hysterically at the reading material provided — Pogo and Peanuts. Her two major problems now are some suspicious-looking plants in the newly planted lawns west of Throop and a large stack of book covers that the Deans' office is trying to give away.

Linus Pauling, from his secretary's point of view, is a "wonderful boss . . . very human, very understanding." Although there is no end of work in the office, and she never gets ahead of Dr. Pauling, Joan (pronounce-

ed Jo Anne) Harris finds that "because he's Dr. Pauling, it's not difficult." When she hears the lively crusader snapping his fingers as he strides down the corridors, she prepares for another busy day typing up answers to letters he receives. (Dr. Pauling dictates replies to all signed letters he gets.) Not all her work is serious; people have phoned to ask if Dr. Pauling thinks it's safe for them to be X-rayed or to suggest that he work on desalting the ocean.

Although she admits chemistry is Greek to her, Mrs. Harris can claim a good knowledge of the social sciences. She is going to school part time now, and in a couple of years plans to be doing research in inter-group relations.

Last but not least (to coin a phrase), Edythe Baker has worked for President DuBridge for 20 years. She began as his secretary when he was head of the Radiation Laboratory at MIT. She almost didn't come with DuBridge when he became President of Caltech because she had a chance to go to England for two months. When she finally said, "Well, I'll give it a try," his comment was brief—"Such enthusiasm!" When she left MIT, the faculty of the Electrical Engineering Department alone was 283, and when she arrived at Tech the entire faculty numbered 283. She thinks her boss is "tops to work for" and is glad she came; she hopes he feels the same.

Bell, Former Math Professor Dies

Dr. Eric Temple Bell, 77, emeritus professor of mathematics at Caltech, eminent mathematician and author of many scientific books and science fiction novels, died December 21. A prolific and versatile writer, he published four books on mathematics, nearly 300 scientific papers, 10 popular books on mathematics, history and social criticism, 13 science fiction novels and many magazine stories. He wrote fiction under the name of John Taine. He also wrote poems.

In recent years he had been working on a manuscript about the work of Fermat, great French mathematician of the 1600s, and reviewing books and technical papers for Bell Laboratories of New York.

Seven years ago Dr. Bell retired from Caltech at the age of

70 after pursuing research and teaching at the Institute for 27 years. He continued to make his home at 343 South Michigan Avenue.

Bell's fiction was distinguished by its violence, including catastrophic natural disasters, huge reptilian monsters and men who turned into fungoid growths.

Among his serious books, Algebraic Arithmetic, published in 1927, and Development of Mathematics, published in 1940, are considered standard works.

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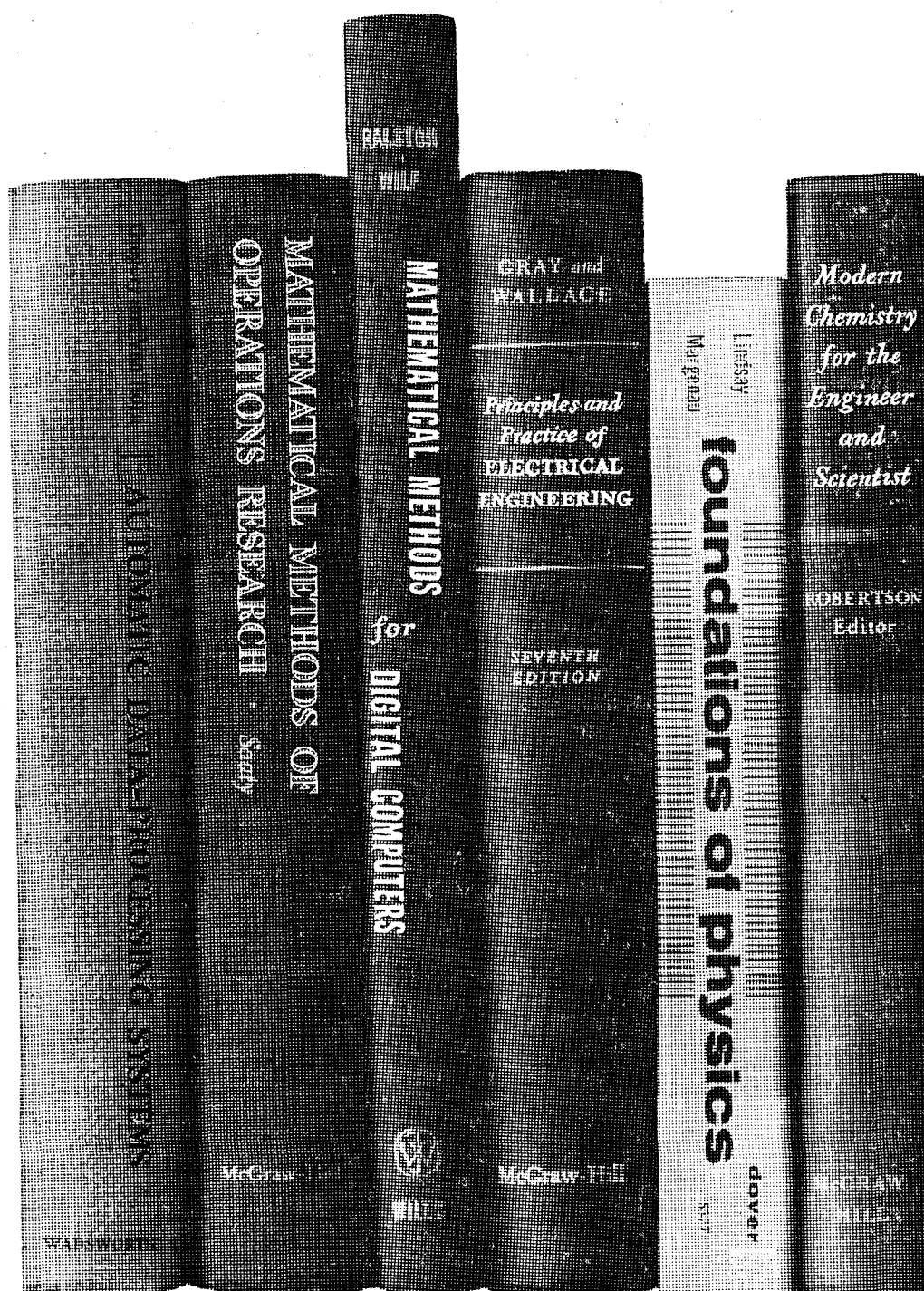
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DuBridge Tells Problem Of Educating Techmen

scribed both the Caltech curriculum and the Caltech student body as outstanding, yet still quite a problem to the faculty, in his introduction to the 1959-60 Annual Institute report:

Several previous reports have discussed the problem involved in adapting our academic policies and practices to the ever-increasing intellectual capacities of the undergraduate students.

In selecting a constant number of freshmen each year from an ever-larger and ever-better group of applicants, we have attained a student body which, judged on the basis of entrance examinations and high school records, cannot be surpassed in the country.

These students need and expect an exceptional educational program. We try to provide it—but the task of making improvements year by year is extremely difficult. Very few other institutions have faced this problem to the same degree, so there is little previous experience to guide us.

Thus, we must make educational experiments and develop our own new methods. Experiments that are unsuccessful (and many are bound to be) may be hard on some students, but there is no other pathway of progress. **INTELLECTUAL DISCIPLINE**

A special problem has to do with the degree to which specific rules and requirements relating to classes, courses, grades, examinations, electives, etc., can be reduced or abandoned for such able students. If the students were all as wise and as ambitious as they are able, there would be no problem; all requirements would be lifted and the student left completely free to outline and pursue the educational program best suited to him.

But in scientific and engineering fields some systematic sequences are essential, some intellectual discipline is required, and experienced judgment is required to select a course of study containing all essential elements plus the required breadth. To insure these, faculty help and experience are clearly called for—and faculty guidance can in part be most simply provided through a set of rules and regulations. The problems are, how to keep the rules in harmony with changing circumstances and how to leave them sufficiently flexible to take care of individual needs and talents.

* * *

FORTY-FIVE PER CENT FAIL

The fact that our freshman class is as highly selected as any in the nation makes it a puzzle why from 10 to 14 per cent still drop out at the end of the first year and 40 to 45 per cent fail to graduate with their class. This mortality has given the faculty serious concern in recent years. An analysis of the class of 1960 by Dean Eaton showed that, while 81 members or 44 per cent original freshman class of 185 did not graduate, only 24 (13 per cent) actually were forced to leave because of academic failure; 26 (14 per cent) withdrew voluntarily to transfer to other institutions, often to major in subjects not offered at the Institute; 17 per

cent are still attending the Institute and will graduate with a later class.

As institutions go, an academic failure rate over four years of 13 per cent is not great. Yet students of the caliber we think we are selecting should not fail at all, nor should so many require more than four years to graduate. Nor should the voluntary withdrawal be so heavy—often representing some type of dissatisfaction or discouragement.

While extensive inquiries into these matters have been undertaken, and many changes in curricula and student activities have been initiated, the problem has not yet been solved. Possibly we are in this instance at the limit of the possibility of predicting—by any selective mechanism—human ability, interest and behavior patterns of a 17-year-old boy. We have hope that there will be an improved spirit on the campus this fall with the opening of three new student houses which will allow practically all freshmen and most upperclassmen to live on the campus. We are also encouraged that the students themselves are taking a keen interest in improving the campus atmosphere in such a way as to add to the enthusiasm with which all students pursue their strenuous intellectual efforts.

Babcock Discovers Star With Magnetic Field Of 34 Kilogauss

Discovery of the strongest magnetic field ever found in nature—one that is 34,000 times stronger than the earth's magnetic field—was reported recently by the Mt. Wilson and Palomar Observatories.

The find was made by Dr. Horace W. Babcock, assistant director of the observatories, which are operated by the California Institute of Technology and the Carnegie Institution of Washington.

Heretofore, the strongest field found for any star was about half that amount. Few are stronger than 5,000 gauss. The earth's magnetic field is a little less than one gauss and the sun's only a little stronger.

"In the star's outer layers, the magnetic field is dominant in controlling and coordinating the motions of the material and in suppressing local turbulence," Dr. Babcock explained. "It is reasonable to assume that a strong, fluctuating magnetic field causes the ejection of much material from the star."

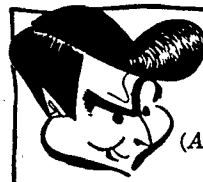
In fact, spectrogram studies show that the star is surrounded by a cloud of gas that is moving outward at a speed of about 11,000 miles an hour.

As with other magnetic stars, the strength of the magnetic field of HD 215441 is not constant. It varied irregularly from 34,400 gauss to 12,000 gauss, but it maintains a constant polarity.

As was expected, Dr. Bab-

cock found evidence that some chemical elements are abnormally abundant in HD 215441. These elements are chromium, titanium and silicon.

If a star has a magnetic field, the field will split the spectral lines of the chemical elements and the extent of this split accurately determines the strength of the field. This is the Zeeman effect.



On Campus with Max Shulman

(Author of "I Was a Teen-age Dwarf", "The Many Loves of Dobie Gillis", etc.)

1961: YEAR OF DECISION

Well sir, here we are in 1961, which shows every sign of being quite a distinguished year. First off, it is the only year since 1951 which begins and ends with the Figure 1. Of course, when it comes to Figure 1's, 1961, though distinguished, can hardly compare with 1911, which, most people agree, had not just two, but three Figure 1's! This, I'll wager, is a record that will stand for at least two hundred years!

1911 was, incidentally, notable for many other things. It was, for example, the year in which the New York Giants played the Philadelphia Athletics in the World Series. As we all know, the New York Giants have since moved to San Francisco and the Philadelphia Athletics to Kansas City. There is a movement afoot at present to move Chicago to Phoenix—the city, not the baseball team. Phoenix, in turn, would of course move to Chicago. It is felt that the change would be broadening for residents of both cities. Many Chicago folks, for example, have never seen an iguana. Many Phoenix folks, on the other hand, have never seen a frostbite.

There are, of course, certain difficulties attending a municipal shift of this size. For instance, to move Chicago you also have to move Lake Michigan. This, in itself, presents no great problem, what with modern scientific advances like electronics and the French cuff. But if you will look at your map, you will find that Lake Michigan is connected to all the other Great Lakes, which in turn are connected to the St. Lawrence Seaway, which



in turn is connected to the Atlantic Ocean. You start dragging Lake Michigan to Phoenix and, willy-nilly, you'll be dragging all that other stuff too. This would make our British allies terribly cross, and I can't say as I blame them. I mean, put yourself in their place. What if, for example, you were a British workingman who had been saving and scrimping all year for a summer holiday at Brighton Beach, and then when you got to Brighton Beach there wasn't any ocean? There you'd be with your inner tube and snorkel and nothing to do all day but dance the Lambeth Walk. This, you may be sure, would not make you NATO-minded!

I appeal most earnestly to the residents of Chicago and Phoenix to reconsider. I know it's no bowl of cherries going through life without ever seeing an iguana or a frostbite, but I ask you—Chicagoans, Phoenixians—is it too big a price to pay for preserving the unity of the free world? I am sure that if you search your hearts you will make the right decision, for all of us—whether we live in frostbitten Chicago, iguana-ridden Phoenix, or narrow-lapelled New Haven—are first and foremost Americans!

But I digress. We were speaking of 1961, our new year. And new it is! There is, for one thing, new pleasure in Marlboro Cigarettes. How can there be new pleasure in Marlboros when that fine, flavorful blend, that clean easy draw filter, have not been altered? The answer is simple: each time you light a Marlboro, it is like the first time. The flavor is such that age cannot wither nor custom stale. Marlboro never palls, never jades, never dwindles into dull routine. Each pack, each cigarette, each puff, makes you glad all over again that you are a Marlboro smoker!

So, Marlboros in hand, let us march confidently into 1961. May good fortune attend our ventures! May happiness reign! May Chicago and Phoenix soon recover from their disappointment and join our bright cavalcade into a brave tomorrow!

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Beaver Cagers Favored In Two Weekend Tests

Caltech's varsity basketballers start the wars afresh tonight when they travel to L.A. Pacific College to engage the Crusaders. Although this is the first game for the Beavers after a four-week layoff, they should be favored to win the game handily. The Crusaders lost to the Caltech freshmen last year, and it is doubtful that they have improved enough in one season to now handle the varsity. Game time is 8 p.m. at the L.A. Pacific gym, only a few minutes' drive from Caltech.

Saturday the Beavers journey to Riverside to play that city's branch of the University of California. This should be an exciting, close game. UCR doesn't have a man over 6 ft. 3 in., but they are fast and have plenty of hustle — more than the Beavers have shown to date.

Next Tuesday the Beavers face the potent Redlands Bulldogs, co-favorites with Whittier to take the SCIAC championship. Redlands has been beating some pretty big schools this season, having lost only twice in close games. The most impressive Redlands win was over Pepperdine, a member of the same conference as nationally prominent San Francisco and Loyola.

Before Christmas vacation Caltech opened the campaign against San Diego Naval Training Center, a team that had played five games before meeting the Beavers. The Techmen played a good game, but first game jitters caused them to suffer two serious lapses, each of about two minutes duration, which cost them the ball game—

Pauling Makes Bomb Record

BY RICHARD KARP

"Linus Pauling Speaks on Fall-out and Nuclear Warfare" is the title of a new Verve L.P. record, featuring Caltech's controversial scientist. This recording is longer than 40 minutes and is a defense by Pauling of his opinions concerning nuclear testing.

Pauling begins by describing a case of dwarfism that he was familiar with and the genetic mutations that were the cause of this dwarfism. He then proceeds to give a brief introduction to genetics and several examples of hereditary diseases which can cause mental and physical illnesses.

This description of possible bad mutations which can result by genetic accidents is also accredited by Pauling later on the first side of the record to X-rays, cosmic rays, and radioactive fallout. After establishing a connection between harmful genetic mutations and radioactive fallout, Pauling then discussed the expense and extent of nuclear weapons. Pauling demonstrated that a nuclear fission-fusion bomb, costing about \$73,000, had seven times the explosive capacity than all bombs dropped during World War II.

On the second half of the record, Pauling makes his plea for elimination of nuclear tests and war. He describes his attempts for accomplishing this end and concludes with a wish for the elimination of war forever.

Asia Expert Dupree Starts AUFS Visits

Louis Dupree, American Universities Field Staff expert on Central Asia and Afghanistan, will visit Caltech next week. He will address the YMCA Diners' Club, speak to the History 5 class this Tuesday and the following Tuesday, and participate in numerous other seminars.

Dupree's schedule:

Sunday, January 8:

7:30 p.m. — INA Discussion Group, 1245 Arden Road.

Monday, January 9:

Noon—Lunch with Prof. R. W. Oliver, Athenaeum.

6:30 p.m.—Upperclass Diners' Club, Chandler Dining Hall. "Progress of Young Afghan from Plough to Ph.D."

Tuesday, January 10:

11:00 a.m.—History 5, 206D — "Afghanistan—Internal Patterns and Problems."

8:00 p.m.—History 124, 205D, "Nationalism without Colonialism, Social and Political Institutions."

Wednesday, January 11:

Noon — "Y" Luncheon Forum, Athenaeum — "A Brief Trip to Soviet Central Asia."

Thursday, January 12:

8:00 a.m. & 11:00 a.m. — Econ 100, 101D — "American Private Investment, a case study."

Noon — International Relations Section, Los Angeles Town Hall, Hotel Biltmore — "Afghanistan—neutral, independent and developing" (illustrated).

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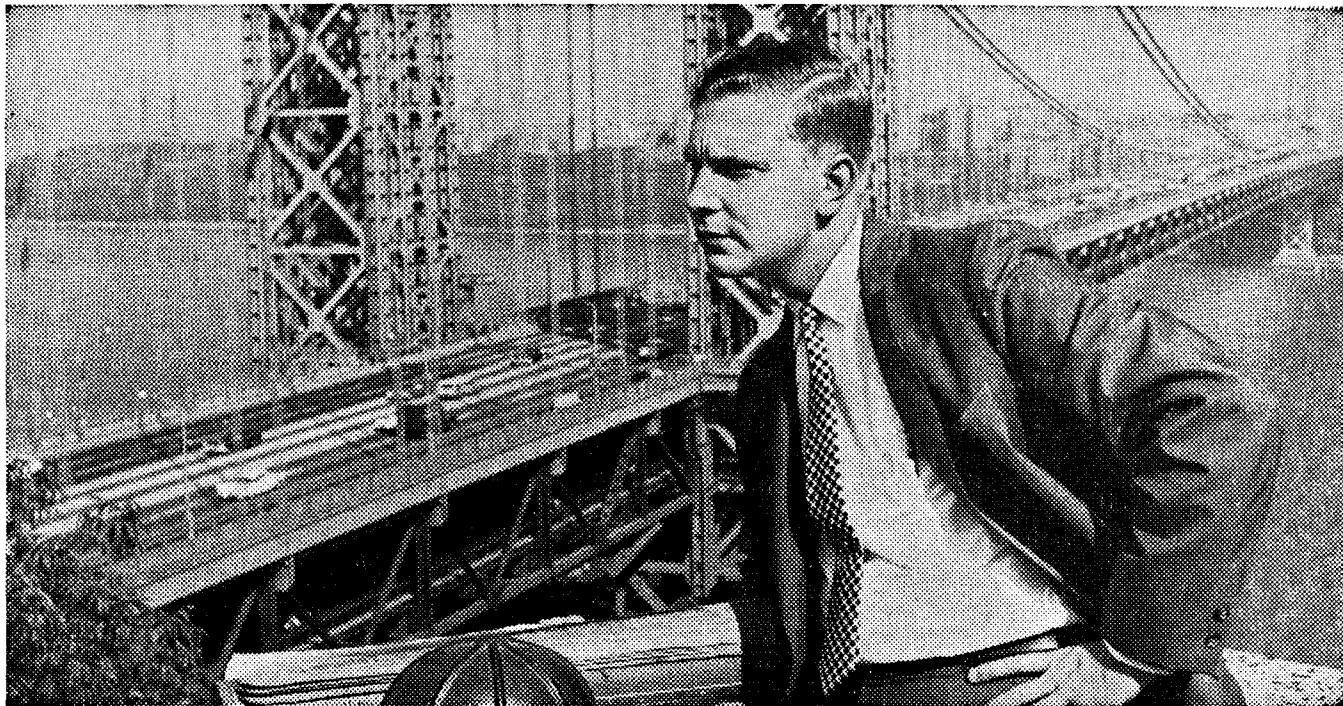
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THIS YOUNG ENGINEER IS ON THE ROAD TO MANAGEMENT

Dick Cotton knew he wanted to take the engineering route into management long before he joined New Jersey Bell Telephone Company. In fact it was his goal when he was working for his engineering degree at Rutgers.

When he graduated, he had his lines out to eleven other companies. He came to New Jersey Bell because: "I didn't feel I was just a number to these people. There was no doubt in my mind that this job would be the best for the long pull."

His first assignment was a tough one. A complex of major telephone cables lay in the path of the approach to the new traffic level of the George Washington Bridge on the Hudson. Dick's job was to find the most practical and economical way to reroute these cables, and at the same time to provide for future telephone growth in the area around the bridge approach.

Dick ironed that one out and got a crack at another tough job.

Next stop: New Jersey Bell Headquarters Engineering Staff, Special Studies Group. Here

Dick was a member of a four-man team whose job was to find ways to eliminate some of the routine work of field engineers to give them "more time to think." Dick also helped plan and control a \$100,000,000 annual telephone construction budget.

Presently, Dick is responsible for telephone equipment engineering projects in the Camden, New Jersey, area.

How does Dick look at it? "This is a growing business. I work with this growth every day. And growth means more room at the top. Of course, I don't figure I'll get there overnight—but on my jobs so far I've had a chance to take a good look at how this business is run. And I think the sky's the limit for a man who really wants to work for it."

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Tyler Develops New Concept Of Cancer

A new concept of cancer, including leukemia, as an allergic disease, was propounded this week by a Caltech embryologist.

Dr. Albert Tyler has presented a description of his concept in the current issue of the Journal of the National Cancer Institute.

The theory is a coordination of a great amount of current information about cancer and about diseases resulting from attempts to transplant tissue from one animal to another under certain conditions. The symptom pattern and general pathology of cancer and such transplant illnesses are, in many ways, similar.

"We can express this theory in terms of cancer cells being allergic to cells in the rest of the body, but the rest of the body not being allergic to the cancer," Dr. Tyler explained.

Many investigators believe that cancer starts with a genetic change in one or more cells in a plant or animal. According to the Tyler theory, the change can occur spontaneously, or from damage caused by radiation, chemicals, or a virus or bacterium. Only one cell needs to be appropriately altered to start a tumor. Others have demonstrated that tumors can be transmitted in inoculations containing only one or two cancer cells.

To conform with the Tyler concept, the change must be the loss or inactivation of a particular gene, or group of genes, rather than mutation to a different kind of gene in the cell. Each cell has thousands of pairs of genes, and each gene carries a bit of genetic information that determines some characteristic of that cell and its progeny. The particular genes that would be lost or inactivated are those which determine that cell's ability to get along with its fellow cells. They are called the histocompatibility genes. And there are probably a number of these in humans. In the cells of mice, for instance, experiments have disclosed 15 different loci (or locations) on the chromosomes where such histocompatibility genes occur.

The cell in which one of the histocompatibility genes has been knocked out is the same, genetically, as its neighbor cells except that the one gene is missing. Since this cell contains no gene that is different from those of the neighboring cells, it does not synthesize any protein material that would be foreign to the neighboring normal cells. Thus the normal cells would still consider the cell with the gene-loss to be one of them. They do not recognize that it is different. They do not, then, become allergic to it.

However, the cell with the missing gene recognizes that it is different from the normal cells. That is because the latter contain one gene that it doesn't have — namely, one of the histocompatibility genes. It can, then, become allergic to the other cells and react against them.

The explanation that is offered by the theory for the excessive multiplication or proliferation of the cells in which gene-loss or inactivation occurred is based on the proliferative response that

antibody-forming cells are now known to exhibit when exposed to a foreign antigen. It is known that injection of a foreign antigen — such as polio vaccine, for instance — stimulates the antibody-forming cells to proliferate — and to produce antibodies. These antibodies can attach themselves to the virus or other foreign matter and neutralize it so that it cannot harm the body.

The stimulus to proliferation continues as long as foreign antigen is administered and disappears after the antigen is eliminated from the body. However, in the case of the cell with the missing gene and its descendants, they are being exposed chronically to "foreign" antigen derived from the other cells of the body.

In addition to being stimulated to proliferate, the altered cells

later proceed to make antibodies against the "foreign" antigen. Antibodies have the ability to destroy cells. Thus antibodies from the altered cells can damage quantities of normal cells. These antibodies may be liberated in the blood or other fluids of the body or may remain bound to the cells and be carried about by them. Such cells of the lymphoid series, bearing cell-bound

antibodies, may also have the ability to destroy other cells.

"It seems likely that evidence for or against this theory can be obtained in a reasonably short time," he added. "In this concept we have an alternative to the currently popular ideas that cancer cells owe their neoplastic (abnormal growth) property simply to their having been in-

fectured by a virus or to the older concepts that certain gene mutations intrinsically endowed the cell with neoplastic characteristics. The present concept supposes that the cancer cell is not innately different from the normal cell of its type. If it were transferred to a host that possessed no genes foreign to it, it would not behave as a cancer cell."

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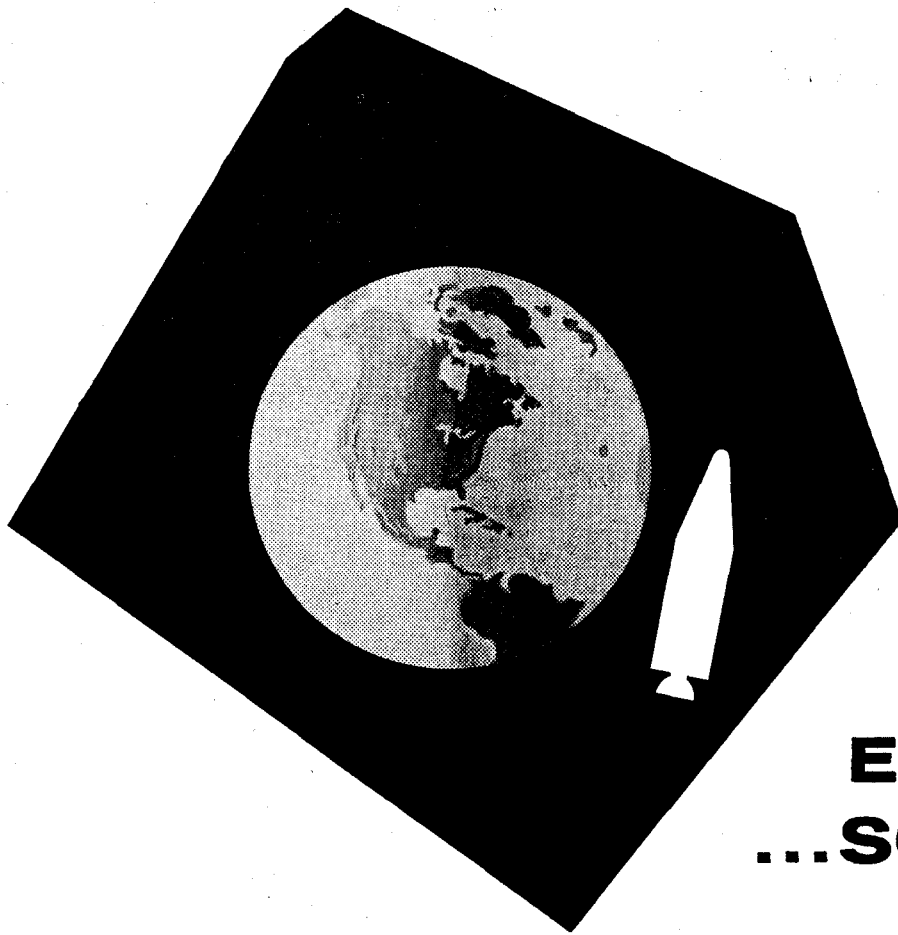
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