15¢

MARCH 11, 1950

SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Greetings from the President

See Page 149

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VOL. 57 NO. 10 PAGES 145-160

New Duo-Cone loudspeaker, developed at RCA Laboratories, achieves the illusion of "living presence."

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For years, working toward the ultimate in sound reproduction, scientists have sought for *living presence*—the illusion that a real musician or speaker is talking, singing, playing in your home.

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GENERAL SCIENCE

Science Bill Passes House

The Science Foundation bill, previously blocked, passes with a provision for FBI security clearances and loyalty checks for all persons connected with the agency.

➤ THE House-passed bill creating a National Science Foundation requires F.B.I. security clearances for all persons connected with the agency. Provision is made for stringent loyalty checks without regard to nationality.

The bill, H.R. 4846, now goes to conference committee to adjust differences between the Senate and House versions. The Senate bill, S. 247, was passed in March of last year. The unprecedented loyalty evaluation powers given to the F.B.I. came from floor amendments.

Text of the amendment introduced by Rep. Howard W. Smith, D., Va., follows:

"No person shall be employed by the Foundation and no scholarship shall be awarded to any person by the Foundation unless and until the Federal Bureau of Investigation shall have investigated the loyalty of such person and reported to the Foundation such person is loyal to the United States, believes in our system of government, and is not, and has not, at any time been a member of any organization declared subversive by the Attorney General or any organization that teaches or advocates the overthrow of our government by force and violence."

Text of the amendment offered by Rep. Daniel J. Flood, D., Pa. is:

"No person a national of a foreign country shall be associated with the Foundation in any capacity whatsoever unless and until the Federal Bureau of Investigation, independent of any investigation made by the government of such person, shall have investigated such person and reported to the Foundation that such person is not and has not at any time been a member of any organization that teaches or advocates the overthrow of the Government of the United States by force and violence."

Although the bill originally had no ceiling on the amount of money that could be appropriated to it, an amendment by Rep. Oren Harris, D., Ark., provides that the Foundation shall be limited to $500,000 for its first fiscal year, ending in June, 1951, and to $15,000,000 for each fiscal year thereafter.

This limiting figure means that when the activities of the Foundation reached the point that more than $15,000,000 were needed, the agency would have to return to a legislative committee rather than the Appropriations committee for authorization to receive more funds.

This would allow the Committee on Interstate and Foreign Commerce to evaluate at that time the program of the Foundation.

The new agency would sponsor, support and direct basic scientific research in universities and other research laboratories.

A key measure in President Truman's legislative program for this year, the bill had support from members of both parties. Only two members of the Interstate and Foreign Commerce Committee, of which Rep. Robert Crosser, D., Ohio, is chairman, did not endorse the bill reported to the House.

A previous National Science Foundation bill was passed by the 80th Congress, but was pocket-vetoed by President Truman. He objected to the administrative set-up under the bill. This defect is remedied in the present bill which provides for Presidential appointment of the Director of the Foundation from among those recommended by the 24-man Board. The appointment would then be confirmed by the Senate.

Rep. J. Percy Priest, D., Tenn., spearheaded the House fight for the Administration. During floor discussion of the bill, he mentioned Dr. Vannevar Bush, war-time chief of OSRD, as his choice for the first Director of the Foundation

The bill was called up under the 21-day discharge rule in the House. It had previously been blocked by the House Rules Committee.

Although the bill is designed to foster basic research, it does allow applied research in matters pertaining to National Defense. Approval of the Secretary of Defense is required, however.

Another amendment requires the approval of the Secretary of State before the Foundation can cooperate in international scientific research activities. The same provision also applies to contracts with organizations or individuals of foreign countries.

After a three-day debate, the bill was passed by a roll call vote of 247 to 125. The security clearance amendments and others that had been made from tthe floor were passed as a group by voice vote.

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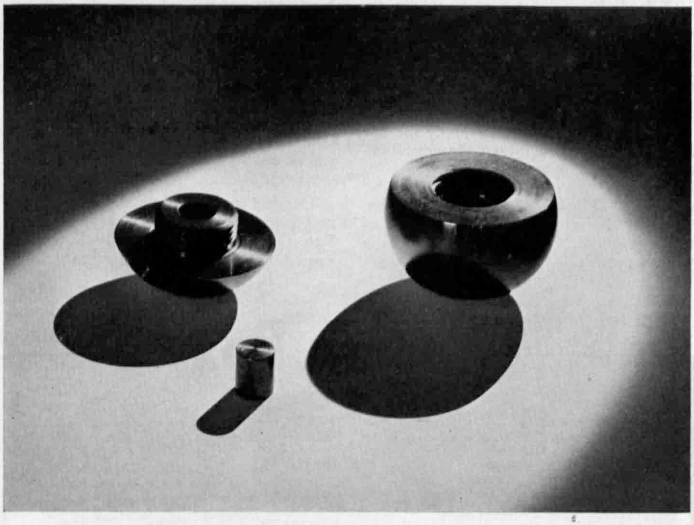
GENERAL SCIENCE

Stringent F. B. I. Check Opposed by Scientists

➤ YOUNG Americans seeking to become scientists will be placed in a special category under the terms of an amendment to the National Science Foundation bill passed



NATIONAL NEUTRON STANDARD—The neutron standard announced recently before the 40 winners of the Ninth Annual Science Talent Search consists of a solid beryllium sphere, 4 centimeters in diameter, enclosing at its center a capsule of radium. The standard is a primary neutron source for the calibration of instruments used in detection of neutrons and measurement of their intensity. Precise neutron measurement is of great importance in atomic energy projects, radio-isotope and other research.

by the House Wednesday. If a youngster should apply to the Foundation for a scholarship, he would find himself in the only class of Americans, outside of employees of the Foundation itself, receiving government money, to be judged on his loyalty by the Federal Bureau of Investigation.

The National Science Foundation would be set up to promote basic research in most fields of science. Research which has to do with nuclear physics—A-bomb and H-bomb work—is specifically kept from the Foundation. Most of the Foundation's work, in fact, would be in non-security fields.

At present, the F. B. I. makes no judgment as to the facts it collects about the loyalty of government employees — those judgments are now made by loyalty boards in the employee's own government office. The F. B. I. was set up by law solely as an investigative body.

It is known that in the past, F. B. I. Director J. Edgar Hoover has objected to Congress when the lawmakers tried to give him a judging function.

Top scientists will probably refuse to serve on the governing body of the National Science Foundation if the bill is passed with the House loyalty amendment in it. And most of the nation's scientists will find the whole idea of a National Science Foundation with this kind of a restriction unacceptable.

The amendment is the most stringent loyalty clause to date. Besides calling for F. B. I. judgment of loyalty, it requires that no employee of the Foundation and no person receiving a scholarship from the Foundation shall now be or shall ever have been a member of any organization declared subversive by the Attorney General.

Of all government agencies, only the law setting up the Marshall Plan administration, requires that employees shall never have been in their lives members of a subversive organization. In the case of other agencies, Congress has recognized that a change of mind or more mature thinking over the years is possible.

If the amendment is written into law, scientists generally would resent being set apart as especially subject to suspicions of disloyalty. Many would refuse to work with the National Science Foundation.

This is borne out by the fact that the Council of the National Academy of Sciences refused to administer the Atomic Energy Commission's fellowship program when Congress required investigation of applicants for fellowships even though they would be studying or working in fields having nothing to do with security.

At that time, the Council said of this even less stringent restriction: "We are convinced that by this restriction the value of the broad program has been greatly reduced; we have grave doubts whether the continuance of the Atomic Energy Commission Fellowship Program thus restricted is in the national interests."

If scientists also refuse to work with the National Science Foundation, its task would be seriously hampered. It was only because of the pure research of the physicists—carried on in the pre-war spirit of scientific freedom—that the A-bomb and now the H-bomb are possible.

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MEDICINE

Scholarships for Hospital Housekeepers

➤ PLENTY of clean sheets, a glass of water for a visitor, a maid who can clean without jarring the bed or waking the patient from a much-needed nap. So that these and many other matters essential to the comfort and care of hospital patients may be better managed, the American Hospital Association in Chicago, Ill., is trying to put the job of hospital housekeeper on a professional basis.

The first formal educational course in this new profession will be given at Michigan State College, East Lansing, Mich., starting April 3. In support of this pioneering work, Pacific Mills, one of the nation's largest textile manufacturers, will provide 10 full scholarships for the course.

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Question Box

GENERAL SCIENCE

What does President Truman consider to be a very important element in building peace? p. 149.

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NUTRITION

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● RADIO

Saturday, March 18, 3:15-3:30 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Captain Howard T. Orville, Head of Navy Aerological Service and past President of American Meteorological Society will speak on "Weather and the Water Supply".

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GENERAL SCIENCE

Truman Receives Winners

The President tells the 40 winners that brains are more important than brawn, although both are necessary, in the promotion of world peace and welfare.

See Front Cover

➤ PRESIDENT Harry S. Truman, when he received the 40 winners, as shown on this week's cover of SCIENCE NEWS LETTER, of the Ninth Annual Science Talent Search at the White House, stressed the importance of the development of brains in promoting the peace and welfare of the world.

"You have a career before you that is absolutely essential to the welfare of this great nation of ours," said President Truman.

"The development of brains is much more important and much more necessary than the development of brawn, although we need both. We must have a good healthy body if we are going to have a good healthy mind. I believe in that sincerely".

"I am glad that you are prizewinners, and I hope you will continue your studies, to be of some practical use to this great country with scientific developments for peace and for the welfare of the world. That is what we are working for most."

Winners Theorize on Peace

➤ WHAT do the nation's top young scientists think will be the most important job for science in the coming years?

The 40 high-school-age winners of the Ninth Annual Science Talent Search were asked that question.

An overwhelming majority of them think that science ought to tackle the job of creating a lasting peace through the method of attacking hunger and disease. "Hunger will never breed peace," said Alice McKinney, 16, Phoenix, Ariz.—and she spoke for most of her young colleagues.

Donn Robert Martin, 17, Cincinnati, Ohio, put it this way: "Communism is bred in the absence of food. Men who are hungry do not differentiate between right and wrong. American science must show the rest of the world that its bread is buttered on their side."

The 40 high school seniors won their current trip to Washington over 2,205 other contestants who took a science aptitude test and wrote an essay on "My Scientific Project." While in Washington they were competing for $11,000 in Westinghouse Science Scholarships. The Science Talent Search is conducted each year by Science Clubs of America, administered by Science Service, with the cooperation of Westinghouse Educational Foundation.

Few of the young scientists think they should confine themselves to an ivory tower. They are, almost unanimously, concerned with the condition of the world today, and almost all of them think science has an important role to play in improving that condition.

"Nearly all knowledge can be used for good and for evil," said Nicholas G. Markoff, 15, Huntington, L. I., N. Y. "Science cannot help the existence of these possibilities; but it must use its power to see that its discoveries are used properly."

Donald B. McCormick, 17, Oak Ridge, Tenn., would go farther. He wants science to create human conditions which will foster healthier minds. "Both national and international troubles are due in large measure to mental ills," he said, "which have their bases in physical diseases as well as in environmental difficulties."

Many of the junior scientists think that an application of the methods scientists use in their search for scientific truth ought to be applied in politics and economics. The scientific methods breed democracy, they think.

Some, however, are not so sure that science can provide all the answers.

"Science," says Jerome Siegel, 16, Brooklyn, N. Y., "is defined as the knowledge of facts and their causes, gained and verified by exact observation and correct thinking. A scientist is therefore one who attempts to discover this knowledge. Knowledge in itself cannot in any way benefit the world. Only application of knowledge can be beneficial to mankind."

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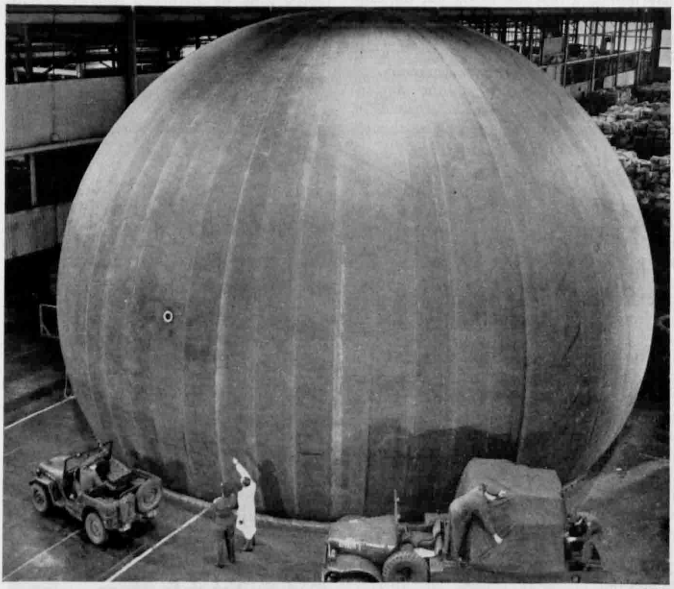
AERONAUTICS

1942 STS Winner Tells '50 Winners of Jet Fuels

➤ HIGH energy per unit of volume is a number one essential in a satisfactory fuel for a fast jet-propelled airplane, the 40 winners of the Ninth Annual Science Talent Institute were told in Washington, D. C., by Dr. Wolf Karo of the National Advisory



PROTECTION BY MUSHROOM—The giant mushroom is one of the rubberized fabric radomes being made to protect Air Force radar installations from wind, snow, sleet and ice. The balloon-like shelter which will be mounted atop a 25-foot tower, is held up by a twentieth of a pound of air pressure without any metal or wood supports of any kind, yet the covering is as tight as a drum.

Committee for Aeronautics. He was one of the Science Talent Search winners in 1942.

Gasoline will not do, he said. Its density is low. The energy released by burning a given volume of gasoline is not sufficient. What is needed are hydrocarbons of high density and high heats of combustion. In the research for a satisfactory fuel, a systematic study of the variety of organic compounds is being made.

Now a scientist at the Lewis Flight Propulsion Laboratory, Cleveland, Ohio, an agency of the N. A. C. A., Dr. Karo was a trip winner in the First Science Talent Search.

He is a graduate of Cornell University in 1945, and received the degree of doctor of philosophy from the same institution in 1948. His major work was in organic chemistry. He came from Germany to America early in 1938 with his parents who found it wise to leave the Hitler-dominated country.

Dr. Karo's work at the Cleveland laboratory is on fuels research. One problem, he said, involves the question of finding enough fuel so that in time of war a jet-propelled air force can be kept aloft. Jet planes consume extremely large amounts of fuel, and considerable progress has been made in making up blends or mixtures of petroleum products that will do the job.

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MEDICINE

Advances Against Cancer

➤ FIVE "noteworthy" advances in the fight against cancer have been made in the past year, in the opinion of the American Cancer Society and the National Research Council's Committee on Growth which acts as scientific adviser to the cancer society. The five advances reported are:

1. Discovery of new evidence on changes of the blood serum in cancer patients which may lead to a practical blood test for cancer.

2. Finding that anti-folic acid vitamin compounds give definite, though limited, benefit in treatment of acute leukemia.

3. Preliminary testing of the anti-arthritis hormones, ACTH and cortisone, in cancer with encouraging results though authorities doubt that they will prove specific remedies for cancer.

4. Discovery that a new chemical compound, called guanazola, will check the growth of certain types of cancer in mice without apparent harm to the animals.

5. Further evidence that chemicals which produce "environmental cancer" also cause changes in the hereditary pattern of the body's cells.

The American Cancer Society allocated $3,769,600 for cancer research in 1949. Of this, $1,596,853 went for institutional research grants and the balance, $2,172,747, went for research projects of the Committee on Growth.

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NUTRITION

Food Habits Change

➤ BECAUSE people get less physical labor and exercise and more people live in cities and less on farms, food habits of the American people have changed a great deal in the last 40 years.

According to research by Dr. Leland Spencer, professor of marketing at Cornell University in Ithaca, N. Y., "we are eating more fruits and vegetables, more eggs, more dairy products, and more fats and oils than our parents and grandparents.

"We are eating much less bread and cereals and fewer potatoes. There has been a slight gain in our consumption of meat, poultry, and fish."

Public knowledge of food values and changes in methods of production and merchandising are other reasons Dr. Spencer gives for the present make-up of our national diet.

In the dairy products group, since the beginning of World War II, the per capita use of ice cream and dried skim milk has gained more than 50%, evaporated milk and cheese between 20% and 30%, and fluid milk and cream about 10%.

Butter has lost ground in the last decade, about one-third less per person, for reasons not entirely clear. The increase in oleo accounts for less than half the butter loss.

"The reduced consumption of grain products means less bread, biscuits, pancakes and waffles on which to spread either butter or oleo. On the other hand, greater use of vegetables is associated with more general use of salads and salad oils and dressings."

Dr. Spencer's study indicated the need for greater efforts to improve the diets of people in the older age groups.

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GEOLOGY

Old Faithful Is More Active, More Popular

➤ "IS Old Faithful slowing down?"

This question, frequently asked by visitors back for a second look, is answered with a whooshing sound by the famous geyser itself: in 1949 it spurted more times, at shorter intervals, to more people, than in any previous year.

Park Ranger Naturalist George D. Marler recorded 1,174 eruptions during the visiting season, or one every 62.3 minutes on the average. On this, Ranger Marler comments, "I know of no previous season when Old Faithful has played on as short an average."

Of the 99 geysers whose activity Ranger Marler records in Yellowstone Nature Notes, he reports very little change from previous years. He noted, however, that Beehive, one of the major geysers, "played with a greater frequency than has been its habit for two score or more years. The Giant, a cyclic geyser which has been dormant since 1944, spurted twice in the 1949 season, marking the probable beginning of another active period.

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METEOROLOGY

March Weather Forecast: Cold East, Warm West

➤ FOR the first time the U. S. Weather Bureau is releasing long-range weather forecasts to newspapers on a regular basis. The experimental extended forecast for the entire month of March has been made by the Weather Bureau.

March will be slightly colder than, or as cold as, the unusually warm February on the eastern seaboard from Washington to Florida.

In New England and the Middle Atlantic states, this March will be much colder than a normal March. From the Mississippi eastward this month will be generally colder than normal.

West of the Mississippi, however, the country will have a warmer March than usual. Only in California and New England is there expected to be much more rain or snow than is usual for March.

With this forecast the Weather Bureau increases the range of their regular predictions from five days to a month. Forecasts for a month's time have been made every two weeks since last August, but this is the first time the Weather Bureau has permitted regular release of the extended forecasts to daily or weekly publications.

Jerome Namias, chief of the bureau's Extended Forecast Section, warned that the predictions were good only when considered as averages over wide areas.

The extended forecasts are made possible only through the collection of information from weather stations all over the Northern Hemisphere. All countries, including Soviet Russia, cooperate in this. Only recently, the State Department announced that both this country and Russia were among those who ratified a convention setting up the World Meteorological Organization to provide further cooperation.

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MEDICINE

ACTH, Cortisone Research

Practically the entire production of anti-arthritis drugs for this year will be utilized in research. Their release for clinical use is not expected.

➤ BETWEEN $10,000,000 and $20,000,000 worth of anti-arthritis hormone compounds are to be produced this year, but practically all of it is expected to be used for discovering what these new and powerful drugs, ACTH and cortisone, will do.

Doctors will not be able to prescribe these new treatments, except in a research situation, because the Food and Drug Administration is not expected to free them for clinical use. Not only are the supplies still limited, but more needs to be known about their effects on arthritis, rheumatic heart disease, some forms of cancer and mental disease and some other ills, in which they have shown some promise.

At present the two principal manufacturers of these hormone materials are alloting them with the advice of anonymous committees of doctors. In the case of both Merck, producing cortisone, and Armour in Chicago producing ACTH (adrenocorticotropic hormone), enough to cover the production cost of these materials is now being charged, about $200 to $225 a gram, which makes the treatment of a human case necessarily expensive. The experts are worried about the undesirable or even dangerous "side effects" that are caused by these drugs under the most careful use. Since the administration of the drugs must be continued to hold the disease in check, the doctors are also very reluctant to start treatment when there is a chance of not being able to continue the drug, either because of the shortage of supply or the untoward effects that might arise. Better not to give the patient the experience of being "cured" temporarily than to be forced to allow him to undergo the cruelty of a relapse.

The five national advisory councils to the U. S. Public Health Service at their first joint meeting urged that all the available supplies of these hormonal drugs be used for research. Bills in Congress are expected to provide about a million dollars to support this research, but the members of the councils, eminent scientists, doctors and laymen from all over the nation, felt that at least $15,000,000 could be used effectively on the urgent research program needed.

One possibility is that the government would acquire most of the available drugs and distribute them for research. Much of the research should be done on animals, not people, which has not been the case in the short time the drugs have been used, because of the shortage. Animal experimentation will discover the dangers of the drugs before they are used on human patients.

Tests of the use of the hormone drugs upon other disease conditions under carefully controlled conditions would be done under the contemplated program. Only a relatively few hospitals, medical schools, laboratories, etc. have the metabolic beds, as they are called, which will give a complete picture of the effects of the treatment. One difficulty will be to increase the facilities and train the scientists to make the necessary tests.

Development of new compounds with similar effects is needed for the future. Already favorable results are reported from Stanford University Medical School where Dr. Robert Davison has used pregnenolone, a direct oxidation product of cholesterol. And in Sweden percorten, an adrenal cortex hormone, combined with vitamin C has been found effective.

Meanwhile there are advances that promise to increase the supply of the better-known drugs. Merck is understood to have developed a new technique for doubling the amount of cortisone obtained from the same amount of ox bile. And so far only about a tenth of the ox bile from government-inspected slaughter houses is going into cortisone manufacture.

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AERONAUTICS

Turbo-Wasp Engine Is Most Powerful Jet Yet

➤ THE power that gives the Air Force North American F-93A its tremendous speed was revealed in East Hartford, Conn., as the Pratt and Whitney Turbo-Wasp engine, claimed to be the most powerful jet engine now flying.

The new engine, with a basic dry rating of 6,250 pounds static thrust at sea level, is equipped with water injection and afterburner, both of which provide substantial power increases over the basic rating for short periods. The engine was developed in this country under the auspices of the U. S. Navy and is also in use in the Grumman Panther, a carrier-based fighter.

The J-48 turbo-wasp, the official designation for the new plane, is an improved version of an earlier British Rolls-Royce jet propulsion engine. Engineering talent of Pratt and Whitney and of Rolls-Royce are together responsible for the improved type. The British version of the new engine, with equal power, will be known as the Tay. It is scheduled for installation in an experimental British jet transport.

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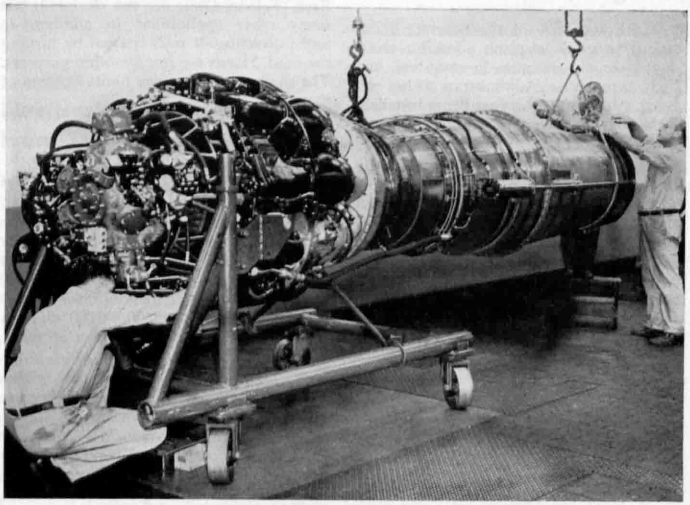

THE ZENITH IN JETS—The Pratt and Whitney J-48 Turbo-Wasp with afterburner, is the most powerful jet engine now flying in the United States. Additional nozzles in the afterburner make it possible for gasoline to be fed directly into the engine's incandescent exhaust gases.

MEDICINE

Seek Nephrosis Treatment To Displace Melon Remedy

➤ A BETTER remedy than watermelons for the kidney ailment, nephrosis, is being sought at the Atomic Energy Commission's Brookhaven National Laboratory in Upton, Long Island.

The procurement of two $7-a-piece watermelons in New York City in February and their air shipment to Edmonton, Can., for treatment of a little girl with nephrosis make a dramatic story. But unfortunately the watermelons are not likely to help the little patient.

The use of watermelons for treatment of kidney disease goes back to folklore. There is no known scientific basis for it.

"Watermelons have been tried many times, but I have never known them to be useful in treatment of nephrosis," Dr. Lee Edward Farr, senior physician and chairman of the department of medicine at Brookhaven National Laboratory, declared.

Dr. Farr is one of the nation's leading authorities on nephrosis. He is working on the problem at Brookhaven now, hoping that with the aid of radioactive isotopes the mystery of why nephrosis develops may be solved and better medicines for it developed.

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AERONAUTICS

300 Omnirange Stations Now in Operation

➤ MORE than 300 of the new-type radio stations to guide airplane pilots on cross-country routes are now in operation, the Civil Aeronautics Administration has revealed. About 100 others are being installed. These 400 will give the entire continental United States complete coverage.

This new-type station is known as the omnirange because it provides radio beams in all directions for pilots to follow. The type it is replacing provided only a four-course range. Perhaps even more important is the fact that it utilizes very high frequency (VHF) waves, a type that is static-free and little influenced by storms or other disturbances in the atmosphere.

The four-course range sends out "A" and "N" Morse code signals in the alternating quadrants surrounding the station. A pilot within a quadrant got one or the other signal. But at the junction of two quadrants the signals overlapped, giving a steady tone instead of either letter signal. When he got the steady tone, he knew that he was "on the beam" and headed for the station, but he had only four beams to follow.

VHF is line-of-sight transmission. The waves travel in straight lines, with little tendency to follow the curvature of the earth. Television and FM transmission also utilize VHF. That is why reception distance is far more limited than that for the ordinary low-frequency radio transmission.

But planes in the air can receive VHF at long distances from the sending station because they are up high enough for straight-line reception. The new omnirange sending station is only about 15 feet high. Under ordinary conditions its signals can be received at 30 miles by a plane 500 feet above the earth, but they can be received at 100 miles by aircraft at 5,000-foot altitude. Maximum reception distance is approximately 200 miles at 20,000-foot altitude.

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INVENTION

Voice of Law May Talk Through Hat

➤ "TALKING through your hat" is now a reality. The "voice of authority" of the traffic officer at the busy intersection may come to the would-be jay-walker straight from his helmet. Equipment for the purpose has been invented.

Among the patents awarded by the government is one for what the inventor calls a "helmet-mounted loud-speaker." It is used in connection with a lightweight, portable public address system adapted to be carried on a person for greatly amplifying the person's voice. The microphone is close to the speaker's face. The "horn" is on top of the helmet.

Patent 2,497,871 was issued to George H. Eash, Toledo, Ohio, for this device. It has many other applications in addition to traffic directing. It is directional by turning the head. Hands are free for other purposes. The equipment in no way limits freedom of movement.

Science News Letter, March 11, 1950

NUCLEAR PHYSICS

Largest Betatron Atom Smasher Now Operating

➤ A NEW atomic big-gun, the world's largest betatron, has just gone into action at the University of Illinois, Urbana-Champaign, Ill., capable of flinging electron particles of electricity at 300,000,000 electron volts to produce X-rays and other effects.

Manufacturing the meson particles naturally found in cosmic rays is one of the jobs it is expected to do. As big brother to smaller atomic machines using the decade-old invention of Prof. Donald W. Kerst, it is more powerful than lesser betatrons that are used in inspecting chunks of metals and treating deep-seated cancers.

The new betatron is one of the largest atom-smashers of any sort actually operating, although larger billion electron volt machines are under construction.

Science News Letter, March 11, 1950

IN SCIEN

PSYCHIATRY

"I Hate You, Mamma" Natural for Children

➤ A PRESCRIPTION for preventing neuroses, or emotional illness, was presented at the meeting of the American Orthopsychiatric Association in Atlantic City, N. J. by Dr. George M. Lott of Pennsylvania State College.

The prescription, for parents to use in managing children, is in three parts:

1. Remember that hostile aggression, such as getting mad, saying "I hate you," and throwing or smashing things, is a natural outcome of the usual training in self-restraint given all children.

2. Avoid making the child feel excessively ashamed or guilty when you punish him. Say to him, "Johnny, I don't blame you for being mad. Just try to control your feelings so people will like you."

3. Don't try to train the child to be too good at too early an age. Such overtraining is a great danger to his emotional and mental health.

The true prevention of emotional disease, Dr. Lott declared, lies in the management of very young children, from birth to the age of two or three years. Their need for love and attention must be satisfied. It is safer to let them express some resentment rather than try to stamp it all out.

Science News Letter, March 11, 1950

AERONAUTICS

High Costs Stymie U. S. Commercial Jet Production

➤ THE reason that you won't be able to fly in commercial jets in the near future is because neither the airlines nor the government is willing to underwrite the high cost of developing these speedy planes.

This cost might be greater than all the working capital of any American manufacturer, Admiral DeWitt C. Ramsey, president of the Aircraft Industries Association, told the House Committee on Interstate and Foreign Commerce.

Declaring that "our leadership in air transport is in jeopardy unless some positive action is taken," Admiral Ramsey urged that a program be started immediately for building these speedy transports.

Jet transports are already flying in Great Britain and Canada, yet no American manufacturer has announced a design for this type of plane available for sale to the airlines, he stated.

Science News Letter, March 11, 1950

E FIELDS

NUCLEAR PHYSICS-GEOLOGY

Two Instruments May Have Detected U.S.S.R. A-Bomb

➤ THE existence of two instruments that might have been used in detecting the explosion of the Russian A-bomb was revealed when the U. S. Geological Survey announced their use in airborne prospecting for deposits of uranium and thorium in this country.

One of the instruments now revealed is a refinement of the Geiger counter commonly used for measuring radiations. This instrument is shielded to cut down on cosmic radiations so that gamma radiation from ground sources may be more accurately measured.

The second instrument is an atmosphere monitor that can measure the "breath" given off by thorium and uranium deposits in the ground. Radioactive materials are known to emit radon gas. The monitor measures ionization of the atmosphere due to radon escaping from radioactive ores.

The Geological Survey reveals that the plane, containing these two instruments as well as other equipment, has been in use in this country in cooperation with the Atomic Energy Commission. Tested out in the air over already known deposits of uranium and thorium, the flying prospectors have proved the effectiveness of these instruments.

Nobody in the government is stating exactly how sensitive the equipment is—particularly the gamma ray counter. And, of course, nobody is stating whether the counter is sensitive enough to have detected emissions of gamma rays from an A-bomb explosion in Russia.

The plane and its equipment were developed by the Trace Elements Section of the Geological Survey. A third instrument installed in the plane used for uranium and thorium prospecting is a magnetometer which can measure the relative magnetic power of certain minerals in the ground over which the plane is passing.

Science News Letter, March 11, 1950

ASTRONOMY

Discover New, Fast Moving Object in Sky

➤ DISCOVERY at Lick Observatory, Mt. Hamilton, Calif., of a rapidly moving object in the sky has been bulletined to astronomers throughout the world by Harvard Observatory, clearing house for such news.

Located in the northeastern sky in the constellation of Ursa Major, the Great Bear, not far from the Big Dipper, the object which is star-like in appearance is far too faint (magnitude 14) to be seen with anything but a big telescope. It may be either an asteroid (minor planet) or a comet.

The discoverer is Dr. C. A. Wirtanen, veteran finder of such objects and comets. The new Wirtanen object will be followed with repeated observations until enough positions are obtained to compute a path or orbit which will tell where it is going and what it is.

Science News Letter, March 11, 1950

AGRICULTURE

Electric Hotbeds Give Vegetables Early Start

➤ THE home gardener in city and suburban areas can use his household electricity to get early plants for re-setting, Robert L. Zahour, Westinghouse lamp engineer stated in Bloomfield, N. J.

A hotbed will be needed, of course, but a small bed can be easily made with a few boards and a little other material. Electricity in ordinary lamps will supply the heat. The 25-watt bulb is best for the purpose, Mr. Zahour said. Higher wattage bulbs are more apt to create hot spots in the soil, stunting seed growth or scorching the tender young plants.

For a hotbed three by six feet in size, eight 25-watt bulbs will ordinarily do the job. Placed in a wooden crosspiece, the bulbs are suspended about 20 inches above the soil. With a thermostat bulb planted just below the surface of the soil, the light and heat can be automatically turned on as needed.

Science News Letter, March 11, 1950

INVENTION

Electric Mat Clears Snow From Steps and Walk

➤ THE lazy-man way to keep the doorsteps and walk clear of snow is by use of an electrically heated mat, a type of which was granted a patent by the government. Made of rubber, the mat absorbs no water. There are water-runoff channels on its upper surface.

Within the rubber are embedded electric resistance wires similar to those used in ordinary heating pads. Being of rubber and flexible wire, the mat may be rolled up for storage. Waterproof cable to connect the mat with an electric outlet is of course necessary.

The inventor of the "ice and snow-melting mat" is Ralph E. Lee, of Detroit. Patent number is 2,497,998. It has many possible applications, he states, such as on landings, platforms, garage driveways and road surfaces. Another suggested use is in place of a tarpaulin over a football field.

Science News Letter, March 11, 1950

METEOROLOGY

New York Ignores Weather Bureau in Experiments

➤ NEW York City officials are apparently excluding the U. S. Weather Bureau from their forthcoming rain-making experiments. Dr. F. W. Reichelderfer, the bureau's chief, said that no approach has been made, either to the national or to the New York office of the bureau.

The nation's top weather man said he thinks this is because some of the statements of the chief rainmaker, Dr. Irving Langmuir, about the Weather Bureau pointedly rule out the bureau as a consultant on the project.

Denying implications of the rainmakers that the bureau is dead set against the idea of making rain artificially, Dr. Reichelderfer declared that the Weather Bureau would be glad to assist in designing the experimental equipment, in providing observers and in evaluating the results.

"The bureau is interested in finding out the facts," he declared. "We don't know whether rain can be artificially induced or not. We don't think Dr. Langmuir has yet proved his case. However, there is a question in my mind whether the rainmakers are really looking for the facts. If they are we would be glad to help them."

Science News Letter, March 11, 1950

NUCLEAR PHYSICS

AEC Makes 89 Patents Available for Licensing

➤ THE release late in February by the Atomic Energy Commission of 17 patents and five applications brings the total number to 89 of such patents that the Commission has released to the public for licensing.

None of these released patents would be of any value in helping an enemy to make an atomic bomb, or even an atomic power plant. Many of them, however, have application in various types of manufacturing processes. Such include a fixture for use in first locating accurately and then welding to each other various valve parts. Another is a switching and timing unit for pneumatic relays.

Several of the 17 recently released have to do with radiation detection and the detection of neutrons. Of particular interest is a remote-control manipulator for persons using dangerous radioactive materials. The operator sits behind a protective wall and controls the movements of a pair of artificial hands on the dangerous side of the wall by means of cables and pulleys. The actual hands are similar to the double hooks used by amputees.

Lists of the patents released may be obtained from the U. S. Atomic Energy Commission.

Science News Letter, March 11, 1950

FORESTRY-INDUSTRY

Wood—More Wood—Needed

Despite the advent of new materials, wood continues to grow in importance. Development of modified woods, longer life and preservation for woods are problems.

By A. C. MONAHAN

➤ AMERICA needs more wood. Not for today particularly but for all the tomorrows to come. In spite of increasing use of metals and other minerals, and of plastics and new synthetics that are employed where wood was used before, wood is more important today than ever before.

Wood is not only for construction, telegraph poles, railroad ties, paper pulp, tool handles and clothespins, but it is a source of raw materials for chemicals, plastics, cattle feed and even for automobile tires and clothing in the form of rayon. And the best thing about wood is that it can reproduce itself, particularly with a little help from man.

Mineral Supply Exhaustible

Nature's supply of many minerals, including the metals, is exhaustible. Known reserves of the most commonly used metals are approaching depletion. Nature will produce no more. Some new deposits undoubtedly will be found. Little known metals will replace many of the common minerals of today when better methods of extraction from their ores are discovered. And common metals will have greatly extended life of service with the development of alloys that resist wear and corrosion. Nevertheless, future generations may encounter a metal shortage. With proper handling, wood may always be plentiful.

Giant steps have already been taken to assure America of the wood it needs for future years. Better forestry practices are becoming more general. This includes not only the clearing out of undesirable underbrush and valueless trees so that the better varieties can grow, but also what foresters call selective logging. This means the harvesting of only the full grown or "ripe" trees, leaving the rest for further development.

Reforestation Practiced

Reforestation is also included in the American program. This means the planting of deforested lands and other areas unsuitable for ordinary crops with desirable nursery-grown tree seedlings. The United States has many millions of acres suitable only for woodlands. They include mountain slopes and terrain too rough for the plow, and also undrainable swampland that will grow valuable swamp timber.

There is much talk about the depletion of American forests with the present rate of cutting. New forests take time to grow. But if timber becomes unavailable in sufficient quantities in the United States, there are plenty of forests in nearby Central and South America to meet the needs for decades to come.

These nations to the south have vast acreages of virgin timber and much of it has high quality. Included is the well-known extremely light balsa wood which America is now using, the mahoganies long used, and also a large number of other trees which can replace well-known domestic woods. Among them are varieties exceedingly stable and free from the tendency to swell or shrink with climatic changes. One type is so dense that it will not float in water.

Tropical Woods Investigated

Yale University School of Forestry has been engaged in an investigation of tropical woods of the Western Hemisphere for more than 25 years. Dr. George A. Garratt, dean of the school, recently stated that the forests of Central and South America include over 10,000 tree species, while in the United States there are only 800, and only some 90 of these attain such size and quality as to be considered commercially important.

There is great diversity in the properties of these tropical woods, he said. Balsa weighs less than six pounds per cubic foot while lignum-vitae weighs 75 pounds, or 12.5 pounds more than an equal volume of water. That is why it will not float.

Some of these woods will decompose within a few weeks if left in contact with soil; others will endure for hundreds of years under the same conditions. Some can be easily carved, but Manbarklak is so refractory that it dulls ordinary wood-working tools within a few minutes.

Longer Life for Wood

Wood technologists in all parts of the world are searching for the best methods of giving wood in use longer life, and they have met with outstanding success. Everybody is familiar with the use of creosote to preserve wood. Properly creosoted railroad ties, for example, have a life of usefulness about four times as long as the same wood untreated. But scientists are searching for even better preservatives. Many chemicals have been found that give long life to wood. A preservative containing pentachlorophenol, for example, does not affect the appearance or natural odor of wood to which it is applied, while it does kill the fungi that cause decay and also kills termites.

Modified Woods Developed

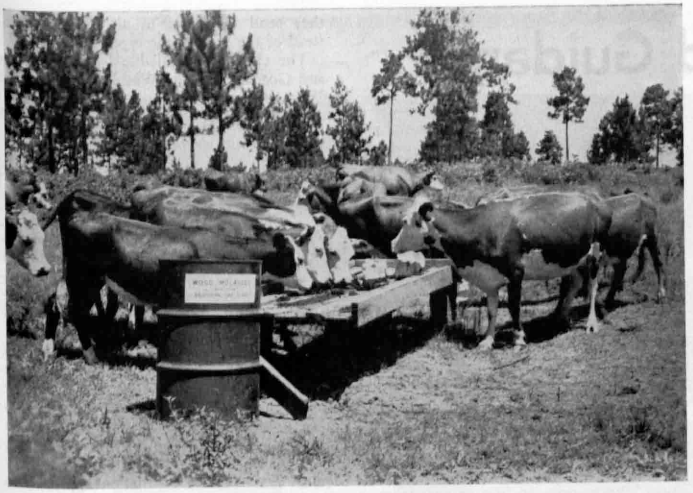
To make wood suitable for many applications for which the natural product is not entirely suitable, much work is being done by wood technologists to develop modified woods by heat, pressure and chemical treatment. Now compressed soft woods can be made into substitutes for hard woods, and wood can be stabilized practically to eliminate swelling and shrinkage with changing climatic conditions.

The U. S. Forest Products Laboratory, Madison, Wis., is the principal place at which many of the modified woods were developed. University laboratories and others supported by industry have, however, made important contributions.

"Staypak" and "Compreg" are examples of modified wood which were first developed in the government laboratory. The government Staypak product, however, was not entirely satisfactory from a commercial standpoint. Work in the laboratory of Western Pine Association, Portland, Ore., has produced a satisfactory product.

Staypak can be produced from nearly any soft wood of low resin content. The whole board is compressed to one-third its original thickness. The process consists of subjecting a board to a pressure of 1,500 pounds per

HARDWOOD SUBSTITUTE — Staypak, coming from the press, is a compressed soft wood, suitable for replacing hard woods.



SWEETS FOR THE CATTLE—Cattle from the range enjoy wood molasses made from wood wastes. This effective use of wood wastes contributes to our wood wealth.

square inch at a temperature of 325 degrees Fahrenheit within the press. No bonding agent is used; the natural lignin in the wood flows under heat and acts as the agent to hold the board in its compressed form.

Compreg is also a development of the Forest Products Laboratory. It is a resin-treated compressed wood which is stabilized by the resin. "Staybwood" is uncompressed wood that has been dimensionally stabilized to prevent swelling and shrinkage by heat alone. Impreg is a stabilized wood which has been impregnated with resin-forming chemicals.

The most effective impregnation treatment, according to officials of the government laboratory, is with what chemists call virtually unpolymerized phenolformaldehyde mixes in water. The treatment is followed by drying and curing the resin within the wood structure. The finished wood will absorb very little water, or give off moisture, and therefore does not swell or shrink.

Number One Enemy Rot

Rot might be called wood's principal enemy. Many millions of feet of lumber are used each year to replace wood deteriorated or completely destroyed by rotting. A prime factor in saving this waste labor and cost is rot prevention. There are some 2,000 species of wood rot known. All are said to be caused by fungi of the class *Basidiomycetes*. They attack the cellulose-lignin complex which is characteristic of wood. Chemical treatment and moisture control is expected to control wood rotting.

Effective chemical treatments to prevent wood injury caused by insects have also been developed.

To conserve the available supply of wood, economical uses of wood wastes must be developed. Much progress has already been made. Wood wastes in terms of pounds of material, a wood scientist recently stated, amount to at least 80% of the salable material produced, and this does not include the logging wastes left in the former forests.

Wood Waste Research

Much experimental work is being carried out in laboratories throughout the country, all designed to find manufactured products that can be made from wood wastes, ranging from sawdust and shavings to mill-waste and logs unsuitable for saw timber. The making of various wallboards is meeting with success. Other types of synthetic-board products are being made from wood fiber recovered from wood wastes.

Another use for wood wastes is as a source of chemicals. Under special treatment, woods can yield various sugars, molasses, several types of alcohol, butylene glycol, glycerine, furfural, acetone, acetic and other acids, tannins, vanillin, yeasts, various phenols, neutral oils, oleoresins, charcoal and other useful and widely used chemicals.

Science News Letter, March 11, 1950

No creature that walks or crawls has the easy-going, devil-may-care manner of the *skunk*, a scientist recently declared.

PSYCHIATRY

Schools Need Guidance

➤ NURSERY schools need psychiatric guidance as well as their problem children, it appears from a study of four nursery schools by Dr. Peter B. Neubauer, Miss Ruth Patten and Dr. Joseph Steinert of the Brooklyn, N.Y., Office of the Council Child Development Center.

And if children with severe maladjustments were separated from the normal children, according to traditional procedure, there would have been a "mass exodus to child guidance clinics and family agencies for treatment," they reported to the American Orthopsychiatric Association, Atlantic City, N.J.

The schools they studied were day care centers originally set up to care for children of working mothers during the war. From one-third to three-fourths of the school funds come from city welfare funds.

Discovery that each school had its own characteristic personality to which children, teachers and parents had to conform, was one of the most significant findings of the study. The personality of one school was set by a director who would be called "bossy" in popular language. The personality of another school was set by the community which was easy-going and informal. In this school, children were permitted a good deal of freedom to fight and break things. But when the teachers reached their limit of tolerance, they were very severe in their punishment.

The Brooklyn scientists, on the basis of their study, advise other psychiatrists, psychologists and educators that they should not accept the role of consultants to nursery schools unless they are going to handle the whole school, rather than an individual child, as the problem.

Science News Letter, March 11, 1950

AERONAUTICS

New Charts to Aid Air Pilots Soon Available

➤ NEW charts to aid both commercial and private airplane pilots were revealed in Washington, D. C. by the U. S. Civil Aeronautics Administration. Those for the northeastern part of the country are now available. Others will be available soon.

The charts, which will replace all sectional charts now in use, come from a joint project of CAA with the U. S. Coast and Geodetic Survey. Their most conspicuous feature is the omnirange and very high frequency navigational information printed in dark blue. Each omnirange station is surrounded by a compass rose almost four inches in diameter, oriented, like the omnirange itself, to magnetic north.

The omnirange is one of the newer developments in air navigation. Some 400 omnirange stations will soon blanket the entire United States. Many are now in use. They are replacing the former radio stations that provide "beams" for pilots to follow. The new stations use very high frequency, static-free radio signals, and they send them out in all directions, instead of the four of the type they replace.

The charts are available from the Coast and Goedetic Survey, Washington, D. C. at 25 cents each.

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CHEMICAL ENGINEERING

Petroleum Analysis Presents Problems

➤ HOW to take petroleum components apart to obtain the many valuable chemical substances that they contain presents difficult problems, many of which were discussed before the American Institute of Chemical Engineers in Houston, Texas.

The separation of hydrocarbons which boil only a few degrees apart is one of the problems. It is difficult and expensive by simple fractionation methods, the chemists were told by H. V. Hess, E. A. Naragon and C. A. Coghlan, Texas Oil Laboratories, Beacon, N. Y. They presented what they called an extractive distillation approach to the separation of a butane from a butene.

Extractive distillation implies the use of a solvent which is higher boiling than either of the key components of the mixture to be separated and which is selective for one of the components. The solvent is introduced near the top of a fractionation tower and the mixture to be separated is distilled against a downward flow of it.

Various selective solvents were discussed by these scientists. Superior solvents were found to be aniline and furfural modified by the addition of water, they stated. They described a continuous extractive distillation pilot plant investigation in which these materials were employed.

The thermodynamic analysis of vapor-liquid equilibria was discussed by O. Redlich, A. T. Kister and C. E. Turnquist of Shell Development Company, Emeryville, Calif.

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GENERAL SCIENCE

Laboratory Ready for Guest Cancer Researchers

➤ COLLEGE students who want research training this summer at famed Jackson Memorial Laboratory and also guest investigators wishing to do cooperative research in cancer and genetics, are already making applications, Dr. Clarence C. Little, director, announced in Bar Harbor, Me.

Researchers in both categories will be able to take full advantage of the new facilities recently opened, including a special laboratory for the investigators, the summer students' laboratory and living quarters built last year and the new research library. The summer students' center and the library were gifts of the Ladies Auxiliary to the Veterans of Foreign Wars.

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IT'S DONE WITH MIRRORS!

Protected by a wall of lead bricks and using a mirror to guide his instruments, this Bell Laboratories scientist is preparing a solution of a radioactive isotope, for use as a tracer to study materials for your telephone system.

Bombardment by neutrons turns some atoms of many chemical elements into their "radioactive isotopes"; these are unstable and give off radiation which can be detected by a Geiger counter. Chemically a "radioactive isotope" behaves exactly like the original element. Mix the two in a solution or an alloy and they will stay together; when the Geiger counter shows up an isotope, its inactive brother will be there too. Minute amounts beyond the reach of ordinary chemical methods can be detected—often as little as one part in a billion.

The method is used to study the effect of composition on the performance of newly developed germanium transistors—tiny amplifiers which may one day perform many functions which now require vacuum tubes.

It enables scientists at Bell Telephone Laboratories to observe the behavior of microscopic impurities which affect the emission of electrons from vacuum tube cathodes. It is of great help in observing wear on relay contacts. And it may develop into a useful tool for measuring the distribution and penetration of preservatives in wood.

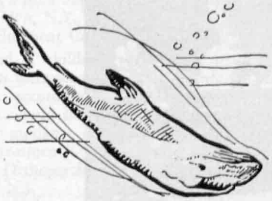
Thus, one of science's newest techniques is adopted by Bell Laboratories to make your telephone serve you better today and better still tomorrow.

BELL TELEPHONE LABORATORIES

EXPLORING AND INVENTING, DEVISING AND PERFECTING, FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

ICHTHYOLOGY

NATURE RAMBLINGS



Sharks

➤ "NOW the Lord had prepared a great fish to swallow up Jonah. And Jonah was in the belly of the fish three days and three nights."

Jonah's "great fish" is not further identified in the Biblical account. The general opinion is that Jonah's place of detention was the belly of a whale, but the question is by no means settled. Many other creatures have been suggested, among them the shark. No less an authority than the 18th century Swedish naturalist Linnaeus has argued that it was a shark that swallowed up Jonah.

The details of the event are beclouded in antiquity and it is unlikely that the argument will ever be finally resolved at this late date. But on grounds of his qualifications for the job, the shark is clearly in the running. The Great White Shark, or Man-eater, grows to a length of 40 feet or more, which seems quite adequate for housing a man if he doesn't thrash around too much.

The name, Man-eater, is obviously something of a misnomer. If the exclusive food of this creature which is found in all the warmer waters of the world were the hapless humans it came upon, it would be a long time between meals. All that the name means to convey is that the shark is not too finicky about its diet.

Sharks prefer to eat fish, and it is on fish that they chiefly subsist. However, there is at least one instance in the record of a shark whose stomach contents included a young sea lion. Another observer reported seeing a shark attack a large loggerhead turtle. It seized the turtle in its jaws and went under with it. Apparently the tough shell was too much for the shark, because next day the observer harpooned a loggerhead turtle with a 30-inch shark tooth mark on its upper shell, and minus a right rear flipper.

Sharks belong to a class of fishes called the Elasmobranchii. They share this category with skates and rays. The outstanding peculiarity of the class is that the skeleton is made up not of bone but of cartilage, which is a strong elastic kind of tissue. This distinguishes them from the true bony fish.

Unlike the bony fish, most sharks give birth to living young. The egg is fertilized inside the mother and the embryos develop there. After birth the young shark receives no further sustenance from its mother. It is on its own and must fend for itself.

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ENGINEERING

New Process Makes Safe Surfaces for Military Use

➤ SANDY beach strips become paved roadways and muddy fields acquire surfaces safe for trucks by new processes announced independently by the U. S. Army and the Navy. Chemical treatment is the secret; the hardening process takes from a few to 24 hours.

The Navy's primary interest is in hardening beach sands to help its Marines make amphibious landings. The Army's interest is in muddy fields and coastal bog to make them suitable for the movements of heavy vehicles, for landing operations, and even for runway strips for airplanes.

The Navy beach-sand hardening process was developed in cooperation with Dr. Hans F. Winterkorn of Princeton University. The chemicals employed are not revealed, but they are inexpensive materials. The process involves low-temperature condensation and polymerization of two liquids through the introduction of a catalytic agent. Treated sand hardens in two to three hours, and after 24 hours is little injured by trucks of 14-ton gross weight.

The Army process was developed by the Army Engineer and Development Laboratories at Fort Belvoir, Va., with initial research made by scientists of the Massachusetts Institute of Technology. The process, which takes less than five hours, is based on a wholly new principle of soil solidification. It results in an elastic, rubber-like surface. It can be used on soils containing up to 30% water by weight.

The actual stabilization process is based on calcium acrylate, an organic chemical which is adsorbed by the soil particles. Then come two other compounds, sodium thiosulfate and ammonium persulfate, which cause the calcium acrylate molecules to lock themselves together.

Preliminary tests now underway at Fort Belvoir indicate that the chemical treatment is far superior to conventional soil concrete and asphalt bonding methods. Treated soil will withstand a 20,000-pound wheel load without any visible ill effect.

Army and Navy are working in these soil solidification problems on separate phases. The two branches of the armed services are working in harmony and are keeping each other thoroughly informed on methods and progress.

Science News Letter, March 11, 1950

Words in Science— LATITUDE-LONGITUDE

➤ IF YOU want to locate the position of a city or a ship, you can do so most exactly by stating its latitude and longitude.

Latitude is the distance of a particular place measured in degrees north or south of the equator. Longitude is the angular distance east or west on the earth's surface, measured by the angle contained between the meridian of the particular place and a prime meridian. Greenwich, England, is the meridian used as a reference.

One way of remembering how to differentiate between latitude and longitude is to think of the earth as a sphere on which the longitudinal lines come together at the two poles. The latitudinal lines, on the other hand, are parallel with the equator.

Science News Letter, March 11, 1950

The U. S. Navy's *first submarine*, built nearly 50 years ago, was a stubby cigar-shaped vessel propelled by a four-cylinder gasoline engine; it was the work of John Phillip Holland.

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publications direct from issuing organizations.

THE AMERICAN ANNUAL OF PHOTOGRAPHY 1950, Vol. 64—Frank R. Fraprie and Franklin I. Jordan, Eds.—*American Photographic Publishing Co.*, 246 p., illus., paper, $2.00 (Cloth: $3.00).

CONTRIBUTIONS TO AMERICAN ANTHROPOLOGY AND HISTORY: Vol. X, Nos. 48-51—Alfredo Barrera Vasquez, Ralph L. Roys, and others—*Carnegie Institution of Washington*, 186 p., illus., paper, $4.00 (Cloth: $4.50). A monograph dealing with Maya Chronicles. Well illustrated.

FAMILY FARE: Food Management and Recipes—Department of Agriculture—*Gov't. Printing Office*, U. S. Dept. of Ag. Home and Garden Bull. No. 1, 96 p., illus., paper, 25 cents.

FARADAY'S DISCOVERY OF ELECTRO-MAGNETIC INDUCTION—Thomas Martin—*Longmans*, 160 p., illus., $2.00. A description of what Faraday did, what apparatus he worked with, and how he made his observations.

FATIGUE STRENGTH OF VARIOUS DETAILS USED FOR THE REPAIR OF BRIDGE MEMBERS—Wilbur M. Wilson and William H. Munse—*University of Illinois*, 60 p., illus., paper, 40 cents. A report of an investigation carried on by the University's Engineering Experiment Station.

FOURTH ANNUAL REPORT OF THE COMMITTEE ON GROWTH TO AMERICAN CANCER SOCIETY, INC., JULY 1948-JUNE 1949—Committee on Growth—*National Research Council*, 321 p., paper, free upon request to publisher, Washington 25, D. C. (Limited supply only.) A summary of cancer research.

HIGHWAY BRIDGE FLOORS—Frank E. Richart, Nathan M. Newmark, and Chester P. Siess—*University of Illinois*, approx. 93 p., illus., paper, 30 cents. A research report.

IN WOODS AND FIELDS—Margaret Waring Buck—*Abingdon-Cokesbury*, 96 p., illus., paper, $1.75 (Cloth: $3.00). For boys and girls and other beginning naturalists. Exceptionally well illustrated.

THE INFLUENCE OF THE GROUP ON THE JUDGMENTS OF CHILDREN: An Experimental Investigation—Ruth W. Berenda—*King's Crown Press*, 86 p., illus., $2.25. A short study of the struggle between social pressures and the individual's demand for autonomy with a foreword written by Gardner Murphy.

INSECT ENEMIES OF EASTERN FORESTS—F. C. Craighead—*Gov't. Printing Office*, U. S. Dept. of Ag. Misc. Publ. No. 657, 679 p., illus., $2.50. A monograph on the forest insects of that part of the U. S. lying east of the great plains.

NEEDLE—Hal Clement—*Doubleday*, 222 p., $2.50. The story of two space ships crashing head on into one of the oceans of the earth. Fiction, of course.

PAPERS PRESENTED AT THE EIGHTH CONFERENCE ON COAL UTILIZATION—J. A. Bottomley, Ivan A. Given, and others—*University of Illinois*, 151 p., illus., paper, 75 cents. Technical and practical information pertaining to coal and its efficient utilization.

PATTERNS OF PANIC—Joost A. M. Meerloo—*International Universities Press*, 120 p., $2.00. Written from the descriptive point of view. Primarily for social workers, soldiers, and Red Cross personnel.

PUBLIC HEALTH SERVICE: Annual Report of the Federal Security Agency, 1949—Public Health Service—*Gov't. Printing Office*, 173 p., illus., paper, 40 cents. Latest developments in the field of Public Health.

REPORT ON EXPLORATORY INVESTIGATIONS OF AGRICULTURAL PROBLEMS OF ALASKA—Department of Agriculture—*Gov't. Printing Office*, U. S. Dept. of Ag. Misc. Publ. No. 700, 185 p., illus., paper, 60 cents.

SCIENCE AND CHRISTIAN FAITH—Edward LeRoy Long, Jr.—*Association Press*, 125 p., $1.75. The author's views of this age-old controversy.

A SURVEY OF ELECTRICAL INSULATION PRACTICES—Max A. Faucett and George E. Leibinger—*University of Illinois*, 96 p., illus., paper, 70 cents. A circular on the salient points of various materials and their use.

THIRTY-FIFTH ANNUAL REPORT OF THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS 1949—National Advisory Committee for Aeronautics—*Gov't. Printing Office*, 62 p., paper, 35 cents. Administrative report without the technical reports.

THIS I DO BELIEVE: An American Credo—David E. Lilienthal—*Harper*, 208 p., illus., $2.50. The essentials of democracy as the author understands them.

Science News Letter, March 11, 1950

SEISMOLOGY

Quake Effects Recorded by Equipment In New Building

➤ TALK about your built-in furniture—engineers at the University of California at Los Angeles have planned for "built in" earthquake-recording equipment in a million-dollar building now under construction.

It is the new Engineering Building on the U. C. L. A. campus. Within its foundations, supporting columns and girders will be buried a wide assortment of delicate recording and measuring instruments.

For the first time, it is thought, an entire building can be used as a research tool in a major study of the effects of earthquakes and everyday strain upon structural design.

C. Martin Duke, assistant professor of engineering, is in charge of the study.

The battery of devices starts 32 feet underground beneath the tons of steel and concrete in the foundations. It continues up a supporting column to the second floor and across a girder supporting the second floor.

Included in the group of instruments are Carlson strain meters, SR-4 strain gauges, pressure gauges, a seismograph and an oscillograph. Strain meters will measure the strain on concrete. Strain gauges will register strain on structural steel. Pressure gauges will tell what portions of the foundations bear the most weight.

These instruments will be connected to an oscillograph which will automatically record information from the various devices. A seismograph connected to the oscillograph will immediately start it recording data from the various instruments when there is an earthquake in the vicinity.

It is believed that the results of the U.C.L.A. study may contribute important "know how" so that in the future engineers may design completely earthquake-proof buildings.

Science News Letter, March 11, 1950

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 507. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

AIR-COOLER UNIT for the automobile is a self-contained unit to attach to the rear bumper which delivers cooled air by flexible ducts leading through window tops. The refrigerating unit is operated normally by a rubber-tired traction wheel running on the pavement, but a gasoline engine starts automatically when the car is at a standstill.

Science News Letter, March 11, 1950

ROCKING STRETCHER, for life saving in drowning accidents, is a collapsible cot, with center support, that can be teetered to give the so-called rocking treatment. With fixtures to prevent seesawing, it can be used as an emergency operating table or, with legs folded, as an ordinary stretcher.

Science News Letter, March 11, 1950

ZIPPER CUFF, attachable to a work shoe to make it "higher" for activities ranging from hunting to plowing, is made of leather and is laced in front. The zipper parts on the lower edge of the cuff and the top of the shoe unite to make an all-weather connection.

Science News Letter, March 11, 1950

TRUCK SIGNAL, shown in the picture, has 500-foot visibility day or night in normal weather conditions. It is a vacuum-

operated plastic arm, 14 inches long, which consists of two tapered panels of transparent amber material set into either side of a sword-like section of opaque white.

Science News Letter, March 11, 1950

ANIMAL CUT-OUTS, made of a pink, flat, tough plastic, can be used for tracing the animal figures or as ornaments in a child's room. They are beveled for easy tracing, can be pinned to a wall, or stood upright on furniture, held with plastic bases which come with them.

Science News Letter, March 11, 1950

FIRE ALARM, without wiring or batteries, will automatically ring its bell if the temperature in the room where it is hung reaches 130 degrees Fahrenheit. It is controlled by a coiled thermostat. The spring that operates the alarm is wound by turning the bell.

Science News Letter, March 11, 1950

COLOR TRANSPARENCIES for photographic displays are made by a new reproduction process which transfers colored images to both sides of a rigid sheet of plastic. When lighted from behind, the new transparencies provide full-bodied color depth and three-dimensional appearance.

Science News Letter, March 11, 1950

TRANSPARENT CASE, for a salesman's samples, displays the contents without being opened. It is made of a clear, tough plastic that will withstand travel and weather, and may be cleaned with soap and water. The case is available in various sizes.

Science News Letter, March 11, 1950

Do You Know?

The *radish* is of unknown origin but came to America from the Old World; its widest use is in the Orient.

The metal *lithium*, which resembles sodium in appearance, has the distinction of being the lightest metal known.

Tung oil from American trees grown in the Gulf area is a more active drying agent in paints than that obtained from China.

Sodium fluosilicate, an effective *rat repellent*, is now being used on the outer surface of paper-board shipping cartons containing foods.

Tiny *bacteria*, cousins of those that ferment wine, curdle milk or make you sick, are responsible for releasing underground crude oil and promoting its flow.

Snorkel is fast becoming a common word in the English language; it is the system used by submarines by means of which the boat may remain submerged for weeks, getting air from the atmosphere through a breathing tube.