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SCIENCE NEWS LETTER

Vol. 52, No. 12

THE WEEKLY SUMMARY OF CURRENT SCIENCE • SEPT. 20, 1947

Operating Television

See page 184

A SCIENCE SERVICE PUBLICATION

PHYSIOLOGY

Women's Stomachs Differ

Girl with accidental hole in stomach shows scientists that emotion causes slowing of action with less acid. May be reason why women have fewer ulcers.

➤ DISCOVERY of a sex difference in stomach behavior was announced by Drs. Russell J. Crider and Shepard M. Walker of Washington University, St. Louis, at the American College of Surgeons meeting in New York.

When a woman is angry, resentful or frightened, her stomach turns pale, slows down and produces less acid and stomach juices. A man's stomach behaves exactly the opposite when he gets angry, resentful or worried.

This discovery may help explain why stomach ulcers afflict four times as many men as women. This difference between the sexes was discovered because an accident made a hole in a young woman's stomach which the doctors could look through from the outside. This is the first time medical men have been able to make such observations of the inside of a woman's stomach, although there have been four cases in which the inside of a man's stomach could be seen this way.

Most famous of these was the case of Alexis St. Martin whose stomach was left with a permanent opening from a bullet wound. An American Army surgeon, Beaumont, studied this man's stomach between 1822 and 1833.

The St. Louis doctors' patient was a 21-year-old Negro college student. The hole in her stomach had to be made to keep her alive. She had swallowed lye by mistake when she took the wrong bottle from the family medicine closet. The lye burned her esophagus, or gullet, so that she could not swallow.

The opening, on her left side, is about three by five inches. It is larger than those of the three men whose stomachs have been studied through such openings. The young woman, identified by the doctors as "Doris B.", has for the past two and a half years cooperated with the doctors in their studies. She has been enthusiastic at being able to help advance medical knowledge, though at times she has been disgusted, sullen and angry over what seemed to her procrastination and neglect in her treatment. It was when she was in such moods that the doctors discovered the difference in her stomach's behavior from that of men in similar moods.

Most immediate direct benefit to other patients is the finding made with Doris' stomach that feeding beefsteaks by vein rests the stomach while nourishing the patient. This beefsteak-by-vein feeding consists in injecting solutions of either predigested protein or the pure amino acids that are protein building blocks. The method, developed shortly before the war, is being increasingly used for patients too weak or for some other reason not able to eat. Such feedings, Doris' stomach showed, not only do not stimulate the stomach but actually decrease its normal resting activity.

Science News Letter, September 20, 1947

AERONAUTICS

New Army Plane Its First Four-Jet-Engine Fighter

➤ THE FIRST U. S. Army four-engine jet-propelled fighter airplane is now ready for ground and taxi testing at the plant of the Curtiss-Wright Corporation. It is the Curtiss XP-87.

The four jet engines of the plane were manufactured by Westinghouse Electric Corporation. The plane has a wingspan of 60 feet and an overall length of 65 feet. It will be operated by a two-man crew. It is designed for action under the most extreme weather conditions.

The Curtiss XP-87, with its bullet nose, has a low canopy over the pilot's compartment and an elevated tailpiece with horizontal fins. The engines are placed in pairs in housings built into the wings at a distance from the fuselage. Landing gear wheels are under the engine housings and under the nose of the plane itself. The crew in the compartment are well ahead of the wings and engine nacelles where an unobstructed view is available.

Science News Letter, September 20, 1947

CHEMISTRY

Nylon Squirted to Sheets And Made into Washers

➤ NOW STRIPS of nylon, the same plastic material that goes into stockings, are squirted out as sheets and punched out in the form of washers and gaskets.

Heat up to 500 degrees Fahrenheit is withstood by the extruded nylon, which is also tough and resilient to wear. The Polymer Corporation located in Reading, Pa., is the manufacturer.

Science News Letter, September 20, 1947

***FOUR-JETTER**—Army's newest fighter is operated by a two-man crew and designed to operate under most extreme weather conditions.*

MEDICINE

New Attack on Cancer

Treatment with series of chemicals that block cancer's energy production system, also results in improvement of patients with other diseases.

➤ IMPROVEMENT in 28 of 58 cancer, Hodgkin's disease and acute leukemia patients has been obtained with a new and fundamental chemical attack on cancer reported by Dr. Maurice Black of New York at the International Cancer Congress.

This is the same Dr. Black who earlier in the meeting reported a simple blood test for cancer. *(See SNL, Sept. 13.)* The improvement unfortunately does not last more than a few months. But Dr. Black hopes that by continuing on his present line of attack he can find a way to outwit the cancer permanently.

One step toward this goal has been taken since he first reported his new method of treatment to cancer specialists last May.

The treatment consists in giving chemicals which block the cancer's mechanism for producing energy from food chemicals. This mechanism is different in cancer cells than in normal cells. The first two chemicals used to block this mechanism in the cancer are sodium fluoride and iodoacetic acid. Within three weeks, the patient begins to get better. The cancer, or in Hodgkin's disease the enlarged glands, shrink but after two or three months, the patient relapses. This is because the cancer has found a new way to run its energy-producing mechanism. A third chemical, malonic acid, is then given. This stops the cancer, but only for a time. Then Dr. Black gives a fourth chemical, sodium azide. This may make the patient worse temporarily, because it lets the cancer go back to its original energy mechanism. But at that point, the sodium fluoride and iodoacetic acid can be started again and will again be effective for a few months.

A carrier chemical which will bind the cancer-stopping chemicals to the cancer cell and thus prevent the cancer from adapting to them is now sought. When and if this can be found, it may provide a way to chemical cures of cancer, acute leukemia and Hodgkin's disease.

Science News Letter, September 20, 1947

PHYSICS-PHYSIOLOGY

Use Radioactive Hormone

➤ RADIOACTIVE sex hormone has been made for the first time.

The conquest of cancer may be advanced by this achievement. Carbon fourteen, radioactive form of carbon produced in the atomic pile, was used to prepare synthetic male hormone. Details of the method are reported by Dr. Richard B. Turner of Harvard. (*Science*, Sept. 12)

The relation of sex hormones to cancer may be cleared up by use of such radioactive synthetic hormones. Scientists have long known that there is such a relation. Sex hormones are now being used in treatment of some forms of cancer with some success. These treatments might be made to succeed in more cases if doctors knew more exactly the relation between the hormones and cancer.

Preventing at least some forms of cancer is another possibility opened up by development of a method to make sex hormones radioactive. Cancer, according to one theory, occurs in some cases because sex hormones and perhaps other hormones are changed in the body to cancer-causing chemicals. The change is a mistake in body chemistry. More about how and where in the body such a change takes place, if it does, might be learned by following the path of the hormone that has been tagged with radioactive material which can be traced.

Science News Letter, September 20, 1947

MEDICINE

Skin Cancers Improve With Beef and Lamb Extract

➤ EXTRACTS of beef spleen and lamb liver injected into the skin have cleared up skin cancers in 33 out of 48 cases, Dr. Joseph C. Amersbach of New York Post-Graduate Medical School reported to the International Cancer Congress.

The extracts were developed by Dr. Leo C. Nutini of the Institutum Divi Thomae, Cincinnati.

All but two of the other 15 showed improvement but the treatments were not completed. There were five recurrences of the cancer, four of them in recently treated cases. Recurrences also sometimes occur, Dr. Amersbach said, when these simple skin cancers are treated with X-rays or by surgery. Two-thirds of the cases have been followed for from two to four years. Dr. Amersbach intends to follow them to see whether they will remain healed for the five years accepted as criterion of success in treating cancer.

Science News Letter, September 20, 1947

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PHYSICS

Lighter Elements Fissioned

Now fission has been caused in nuclei as light as tantalum, element 73, by ultra-high energy atomic bullets from giant cyclotron.

➤ FISSION, originally confined to the heaviest elements such as uranium and plutonium, has been caused in atomic nuclei as light as tantalum, element 73, by ultra-high energy atomic bullets fired by the giant University of California cyclotron.

Splitting of nuclei in the fission reaction was achieved with platinum, lead, bismuth, and thallium, as well as with tantalum, a group of Berkeley scientists report. (*Physical Review,* Aug. 15.)

The scientists add that elements between tantalum and bismuth, the heaviest of the five, probably could be "fissioned," but that no efforts have been made to do so yet. These intermediate elements include mercury, gold, iridium, osmium, rhenium, and tungsten.

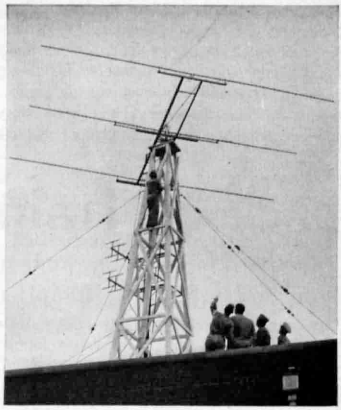
The group of scientists reporting the research include Dr. Isadore Perlman, R. H. Goeckermann, Dr. D. H. Templeton, and Dr. J. J. Howland. The research was sponsored by the Atomic Energy Commission.

Dr. Perlman stated that ultra-high energy fission with deuterons, neutrons and alpha particles differs from the slow neutron fission which causes an atomic bomb to explode. There is no chain reaction, he explained, therefore the high energy fission reaction in these elements is not applicable to making a bomb or to atomic energy.

The scientist added that such research is invaluable in yielding new fundamental information about the atomic nucleus.

In addition to the absence of a chain reaction in high energy fission, this type of fission differs from slow neutron fission in other ways. Some stable, non-radioactive isotopes are found as primary fission products. Nuclei fissioned by high energy particles tend to split more evenly, where slow neutron fission produces a less even split. Some products not found in slow neutron fission are produced in the heavier elements. There is a decreasing incidence of fission in lighter elements with high energy particles.

Science News Letter, September 20, 1947



FOLLOWS PLANE—This rotating antenna always points in the direction of a plane in flight, helping to maintain constant contact between the pilot and the AAF in Washington.

PHYSICS

Diamonds Count Radiation

Because of small size they can be used inside human body to detect rays from radioactive materials. Must be perfect gems.

➤ DIAMONDS can be used to detect and "count" the radiations of uranium and other radioactive materials.

This discovery, disclosed at the National Bureau of Standards, may give atomic scientists a new tool and offer a new type of alarm instrument to protect the lives of atomic workers from potentially deadly rays.

Bureau of Standards scientists said tests have shown that diamonds, size-for-size, are a thousand times more sensitive detectors of alpha, beta and gamma rays than any man-made counter. The Geiger-Mueller counter, frequently used to reveal atomic radiation, is considered one of the most sensitive of scientific instruments.

Diamonds used as counters in the same manner as the Geiger-Mueller counter have two big advantages over standard radiation counting instruments. Diamond counters could be used for a long time, compared with the three months to two years of use for standard equipment, and the diamond counters can be far smaller. Small size will permit diamond counters to be used inside the human body or in small openings in industrial equipment, scientists at the Bureau of Standards explained.

To detect and measure the radiation from radioactive materials, the diamonds must be colorless and "perfect." Only one diamond in 40 is estimated to qualify.

Diamond counters tested at the Bureau of Standards use standard counting apparatus with the diamond placed between two small brass electrodes. One electrode puts 1,000 volts of electricity across the diamond, while the other connects with the counting apparatus.

Rays from radioactive materials are counted by setting up an electrical pulse when they strike the counter. When a ray strikes a diamond, it knocks an electron off one of the atoms in the diamond molecule to set off the electrical pulse.

The structure of diamonds includes a large percentage of empty space for the pulse to be set up in. Though they are one of the hardest substances known, diamonds actually contain only .0000-00000000001% of matter, or atoms. Another advantage is that diamonds are crystals which have the atoms arranged in a regular pattern with paths for the electrons to follow.

Science News Letter, September 20, 1947

GEOPHYSICS

FM Radio Waves Used in Prospecting

➤ FM RADIO waves are used in geophysical prospecting for such things as oil domes, ore bodies and rock strata fit for bridge and dam foundations, in the invention on which patent 2,426,918 has been awarded William M. Barret of

Shreveport, La., assignor to the Engineering Research Corporation of the same city. Mr. Barret declares he has discovered that earth layers do not quench electromagnetic waves of radio frequency as rapidly as has been assumed, so that he can project these into the ground and receive their echoes at suitable distances. Radio signals projected directly to the receiving station travel at the known rate for such waves in the atmosphere and thus serve to time the exploratory waves.

Science News Letter, September 20, 1947

MEDICINE

Lack of Training a Danger

Patients of the next generation may suffer because thousands of young doctors returning from war cannot get the surgical training they need.

➤ FROM such triumphs as the blue baby operation, American surgery may descend in the next generation to a new low level of unnecessary and poorly done operations. If it does, hospitals unprepared to meet the challenge of the immediate postwar situation will be to blame.

This grim picture of the future of surgery was presented by Dr. Harold L. Foss of Danville, Pa., before the American College of Surgeons in New York.

At the same time, TB patients and their doctors were being assured that they run less risk from the operation of having a lung removed than they do from tuberculosis itself. Good results after a lung removal are of long standing, and good health can be restored by the operation, Dr. Richard H. Overholt of Brookline, Mass., declared.

The operation is advised, he said, for patients who have had all other forms of treatment without benefit and those who have associated diseases or a type of tuberculosis in which other forms of treatment are known to fail.

Danger for surgical patients in the next generation comes from the fact that thousands of young doctors returned from war have not been able to get further training in surgery in hospitals. At the Geisinger Memorial Hospital where Dr. Foss is surgeon-in-chief, 14 residents were appointed for surgical training this year. But, he reported, 410 men applied for these positions.

"Thousands of men failing to secure training they desire and for which they are willing to make every sacrifice are going into practice discouraged, often cynical and completely untrained.

"The inadequacy of their training," he predicted, "will be reflected in the generation upon which we now enter."

Smartly styled, well pressed uniforms for orderlies and other non-professional workers in hospitals would be a good step toward solving one of the most pressing problems of all hospitals today, the labor problem. This is the advice of Brig. Gen. Robert Wood Johnson, chairman of the board of Johnson and Johnson, to the College of Surgeons.

Such a step would not be trivial, he pointed out, because it would do much to give hospital help a feeling of self-respect which is a big factor in the performance of any worker. It would help also by inspiring a greater respect by nurses and internes and staff doctors for the non-professional worker.

"It must be difficult," Gen. Johnson observed, "for the primly starched nurse to respect fellow employees who look as if they had tumbled directly from a wet wash bundle."

On the fundamental problem of hospital income, Gen. Johnson advised hospitals to contact local labor leaders. The hospital should work out with them plans for serving organized wage earners and so receiving their support.

The days of large and continuous contributions from wealthy people are over, Gen. Johnson believes. Public income from taxes may increase but is not likely to meet every need of our 6,700 hospitals with their 1,700,000 beds. But wage earners, the people who produce and receive the bulk of the national income, also form the great majority of hospital patients. Through their labor organizations they may be able to help finance hospitals.

Science News Letter, September 20, 1947

RADIO

International Television Is Predicted Soon

➤ TELEVISION of the relatively near future will permit us to look around the earth, from city to city and nation to nation, as easily as we now listen to global broadcasts, Brig. Gen. David Sarnoff, president of Radio Corporation of America, told the American National Commission of the United Nations Educational, Scientific and Cultural Organization meeting in Chicago.

This is no idle dream, he said, and no one need doubt that we shall have international television. It is nearer than most people may realize. Already the scientific principles and means for worldwide television are known. No technical problem is involved that money cannot solve.

The system predicted would permit Americans to see events as they occur in foreign nations, and their citizens to see happenings in other nations in the same continent or in other continents. It would give a picture of life more vivid than can be conveyed by the press or the radio.

Another development to be revealed soon, Gen. Sarnoff designated as "ultrafax" or a radio mail service. It is a combination of radio and television. The system will transmit letters, printed pages, maps and pictures, delivering them to their destination as error-free facsimiles of the orginal.

Details of this RCA ultrafax system will be revealed in a month, he said. It is capable of transmitting the equivalent of 40 tons of airmail, coast to coast, in a single day; a 500-page book in half a minute, and a Sunday newspaper, including the comics, in one minute.

Science News Letter, September 20, 1947

PLANT PHYSIOLOGY

Plants "Needled" for Microchemical Tests

➤ STALKS, stems and other parts of plants can be very accurately "needled" to test the effects of 2,4-D and other chemicals, through a new technique developed by Miss Irma M. Felber of Michigan State College. (*Science*, Sept. 12.)

Where the plant part to be tested stands at such an angle that it will not support a drop of liquid, Miss Felber pierces it with a needle made of fine florist's wire, which has been threaded with ordinary white mending cotton soaked in a solution of the chemical. Then she snips off the thread close, on both ends. Or, if a continuing supply of the chemical is wanted, she dips one end of the thread in a vial of the solution and lets it serve as a wick.

Science News Letter, September 20, 1947

MEDICINE

Stop Excessive Bleeding

Protamine used to control the action of heparin which saves patients from death by blood clots. Lung operations also cure.

➤ A WAY to save patients from bleeding to death after escaping death from blood clots in brain or heart was announced by Drs. Conrad R. Lam and Leonard L. Cowley of Detroit at the meeting of the American College of Surgeons in New York.

Fatal blood clots that come sometimes after operations and childbirth, and even oftener in medical patients, may be prevented by using a chemical, heparin, which makes the blood more fluid. When patients are given heparin, the time it takes their blood to clot may be prolonged from a normal 19 minutes to two hours.

But when it takes as long as two hours for the blood to clot, the patient may bleed to death from a cut or from the operation wound or after childbirth. So doctors have hesitated to use heparin.

This danger of fatal bleeding can be overcome by protamine, the fish-protein chemical used to prolong the action of insulin in diabetes. A dose of protamine injected into the veins will bring a very slow clotting time back to normal in five minutes, the Detroit doctors reported. They consider it an effective weapon to combat emergencies when a patient is being given heparin.

Penicillin Brings Complication

Penicillin, famous mold chemical that has saved thousands of lives from pneumonia, has brought a new complication in its wake. This is collapse of the middle lobe of the right lung.

Remedy for the condition is an operation to remove the collapsed lobe, Dr. Evarts A. Graham, professor of surgery at Washington University, St. Louis, told members of the American College of Surgeons.

Patients with this condition are coming to doctors in large numbers. Penicillin should not be blamed, Dr. Graham emphasized. Without the mold chemical, the patients would be dead because the pneumonia they suffered was so severe. But although they have not died, they have never fully recovered. They have attacks of fever, they are bothered by coughing and they have not regained the weight lost during the pneumonia.

The operation restores them immediately to health. The day afterwards, they feel well. They leave the hospital in eight or ten days, perfectly well, and go back to work in a month.

They develop the lung collapse, technically known as atalectasis, partly because of the peculiar anatomy of the right lung. This lung, unlike the left, has three lobes instead of two. On either side of the bronchial tube leading to its middle lobe are lymph glands draining the lower and middle lobes. In severe pneumonia, which killed the patients before penicillin, these glands become very swollen. As a result they squeeze together the bronchial tube leading to the middle lobe. Collapse and its unpleasant symptoms follow.

The condition can be detected by X-ray pictures. It usually afflicts middle-aged patients after pneumonia. It seems to be replacing as a complication of pneumonia, the empyema, or lung abscess, that was once so common in children and young people following pneumonia, but now practically banished by penicillin.

A lung operation that cures patients of a disease which, though not fatal, can make social outcasts of its victims, was reported by Dr. Alton Ochsner of Tulane University, New Orleans.

The disease, which is more common than tuberculosis, is known as bronchiectasis. It consists of a dilation of the bronchial tubes. Infections ranging from pneumonia to influenza and whooping cough are the primary causes. The patients are afflicted with a chronic cough which brings up foul-smelling sputum. The frequent cough and the smelly sputum may make their friends avoid them.

The operation consists in removing the affected part of the lung. It is advised for the one out of ten bronchiectasis patients who have a severe form of the disease, and particularly for young people.

Because a surgeon went in for weight-lifting in his college athletic program, patients crippled by infantile paralysis and other conditions are getting back the use of partly paralyzed, shrivelled and useless muscles.

The surgeon who uses weight-lifting as treatment is Dr. Thomas L. DeLorme, Jr., of Boston.

The secret of his treatment's success is that it consists in power-building exercises, instead of endurance-building ones.

Professional strong men have known and used the principle for centuries. To build power, you lift the heaviest weight you can raise and repeat this only a few times. Exercises with lighter weights repeated many times, the customary type, build endurance but not power.

Working with chronic infantile paralysis patients, Dr. DeLorme finds strong evidence, though final evaluations cannot yet be made, that the method gives increase in size and power of muscles after many years of paralysis. The method is now being tried on patients with rheumatoid arthritis. It has already proved its value in patients with weakened, painful and useless muscles following war and other injuries.

Science News Letter, September 20, 1947

Rabbits will let garden plants alone if the growing vegetables are sprayed with sulfur dust, powdered lime or ordinary pepper.

ONLY FOR PEACE—Model of an atomic pile, the first to be built exclusively for peacetime research. Inspecting the model are Dr. Lyle Borst, atomic pile expert, and Wells N. Thompson, of the H. K. Ferguson Company, in charge of the construction. It is being built for the Brookhaven National Laboratory.

MEDICINE

Television and Movies Aid Training of Doctors

See Front Cover

➤ WILL television compete with moving pictures as a means of teaching future doctors? The possibility appeared as a result of demonstrations of both methods at the meeting in New York of the American College of Surgeons.

Operations to remove stomach, gallbladder, and thyroid gland and to repair a hernia were televised from the operating room at New York Hospital to a suite in a hotel more than 20 blocks away. Surgeons in the hotel suite could see details of the operation as clearly as if they had been standing next to the operating table.

Since only a few surgeons can get that good a view of an operation, television promises greatly to extend the teaching value of the hospital clinic.

Moving pictures, combining animation such as that used in animated cartoons with shots of the actual operation, are another valuable teaching aid for medical students. One such picture was shown and enthusiastically received.

Besides the question of which has greater educational value, the relative costs and such technical problems as securing a special television beam that cannot be picked up by other receiving antennas may help to settle the question.

Science News Letter, September 20, 1947

PSYCHOLOGY

Brightest Boy Scientists Are Bigger and Healthier

➤ AMERICA'S brightest boy scientists are taller, heavier and healthier than U. S. soldiers of the same group. This was found in a study made by three psychologists and reported to the American Psychological Association.

The more brilliant of the youthful scientists are younger and more ambitious, but they are likely to have poorer vision, the study revealed.

Conclusions are based on a review of questionnaires sent every year to all contestants in the First Annual Science Talent Search for the Westinghouse Science Scholarships held in 1942. The study was made of about 2,000 superior boys now in their early twenties. They placed in the competition among the 40 winners, 260 honorable mentions or participated without placing.

Dr. Harold A. Edgerton, Ohio State University; Dr. Steuart H. Britt, McCann-Erickson, Inc., New York City, and Dr. Ralph D. Norman, Princeton University, who conducted the study, found that their conclusions agree with previous studies made of persons gifted in intelligence. The more brilliant are generally more superior in other respects.

The three scientists added a new discovery. They found there is a direct relationship between high intelligence and returning questionnaires. The more brilliant were more faithful about sending back answers to the questions. The psychologists think this is due to well implanted habits of promptness or to pride in accomplishment.

Drs. Edgerton and Britt are the designers of the Science Aptitude Examination for the annual Science Talent Search. Examinations for the Seventh Annual Science Talent Search will be issued in November to seniors in private, parochial and public schools. The Science Talent Search is sponsored by Science Clubs of America, administered by Science Service, and supported by the Westinghouse Educational Foundation.

Science News Letter, September 20, 1947

ORDNANCE

V-2 Firing from Navy Ship Possibly Narrow Escape

➤ THE NAVY'S giant aircraft carrier Midway may have had a narrow escape when the first V-2 rocket was fired from a ship.

Army rocket experts, who have been firing the V-2's for more than a year over the desert at White Sands, N. Mex., said that reports to them indicated the first shipboard firing of the German weapon was no routine shoot.

The rocket was spitting fire from the wrong places when it was launched. It traveled an estimated six miles and exploded. Best guess is that the historic missile developed a fuel line leak, but the exact cause of the explosion can never be known certainly.

"We had a V-2 explode like that at White Sands last year when the Secretary of War was watching," an Army Ordnance spokesman commented.

He explained that the rocket vibrates as the thrust builds up during launching. This can shake loose parts in the rocket such as the fuel line.

Equipment for the firing from the Midway was loaned by the Army and will probably be returned to White Sands. The Army, however, has another set of launching equipment.

Science News Letter, September 20, 1947

IN SCIEN

PHYSICS

"Silent Sound" Tested For Washing Clothes

➤ HIGH FREQUENCY sound waves may clean your clothes in the washing machine of the future.

The ultrasonic waves cannot be heard by human ears, but they can launder clothes. A demonstration in the ultrasonic laboratories at Pennsylvania State College recently demonstrated how these vibrations can provide the mechanical force of a standard washing machine.

In the demonstration, a dirty cloth in a bucket of soapy water was given an ultrasonic wave treatment. Areas of the cloth which had been exposed to the waves came out clean.

Work on ultrasonic laundering has been started under the direction of Dr. Pauline Beery Mack, director of the Ellen H. Richards Institute, and Dr. Harold K. Schilling, director of the acoustics laboratory.

Research on ultrasonic waves for washing clothes is also being carried on in Great Britain. One theory is that dirt is held to clothes by electrical attraction, and that sound waves will help shake the dirt loose.

Science News Letter, September 20, 1947

ICHTHYOLOGY

Fish Examined by X-Ray Without Dissection

➤ X-RAYS are useful in making internal examinations of fish specimens that may be too valuable to dissect, W. A. Gosline of the University of Michigan told the meeting of the American Society of Ichthyologists and Herpetologists at Higgins Lake, Mich. The technique is especially well adapted for the study of the skeleton, which in many groups is important in identification.

At the same meeting, R. E. Johnson and L. E. Hiner told of the usefulness of a new collecting instrument, the electric shocker, in studying the population of fishing streams and pools. The device brings out of hiding even the rarest and shyest of fish, which have hitherto been overlooked in making such census counts.

Science News Letter, September 20, 1947

E FIELDS

PSYCHOLOGY

Birds May "Tell" Us How We Learn to Talk

➤ PARROTS and other talking birds may be the guinea pigs in experiments designed to find out how humans learn to talk if the suggestion of Dr. O. H. Mowrer, Harvard University psychologist, is carried out.

Scientists have already collected a large amount of information about the learning of rats, cats, dogs, apes and other animals. And they know a lot about how human children learn. But knowledge in these two fields is not yet well coordinated, Dr. Mowrer told the American Psychological Association.

In the whole animal kingdom, only talking birds offer an opportunity to study anything that is comparable to the learning of language in humans. But so far this opportunity has not been exploited, Dr. Mowrer explained. He plans systematic experiments that will show whether the birds learn to talk through some special "instinct of imitation" or by some other psychological mechanism.

Science News Letter, September 20, 1947

PHYSIOLOGY

Wrap Your Brain in Plastic; —It Won't Notice Difference

➤ WRAP up your brain in a sheet of plastic polyethylene; it won't know the difference between that and its natural covering, the dura mater. This discovery, of great potential importance in brain surgery, is announced by three Boston surgeons, Drs. Franc D. Ingraham, Eben Alexander, Jr., and Donald D. Matson. (*Journal, American Medical Association,* Sept. 13.)

Polyethylene, also known as polythene, is not a brand-new plastic. It has been made in England since 1936, and in this country since 1943. It is a translucent rather than a transparent plastic, flexible without being limp, but not very elastic. It can be formed into thin, tough sheets and drawn into tubing. It is thus probably usable for other purposes within the body than as a covering for the brain after surgery.

Thus far, it has been used only experimentally, on cats. It proved a perfectly good "ersatz" for the dura mater, or outer covering, of the feline brain.

Postmortem examination, both gross and microscopic, produced no evidence of irritation or injury to the brain tissue.

One thing has to be watched, however, the three surgeons warn. The polyethylene must be obtained in chemically pure form, not with the antioxidant chemical that is sometimes added to improve its performance in non-surgical uses. This added chemical, unlike the polyethylene itself, does irritate living tissues.

Science News Letter, September 20, 1947

PLANT PHYSIOLOGY

Uranium Solution Boosts Yield from Treated Seed

➤ RADIO-AGRICULTURE may be one of the developments of the atomic age that is now dawning. Hints of what may be coming are given in a report to the French Academy of Sciences by a nephew of Henri Becquerel, first man to observe radioactivity, the botanist Paul Becquerel. He states that treatment of seeds with solutions of salts of the radioactive elements greatly increases their yield as compared with control plants from untreated seeds.

Working with Mlle. Jacqueline Rousseau, M. Becquerel dipped peas in a one-to-10,000 solution of uranium nitrate. Vines grown from these out-yielded the controls by 10% on a dry-weight basis. When a growth-promoting hormone, phenylacetic acid, was added to the solution, the increased yield amounted to 27.5%. Similar treatment with a solution of manganese sulfate brought about a 19% dry-weight increase in yield.

Science News Letter, September 20, 1947

ZOOLOGY

Don't Use Bats To Drive Out Bats

➤ WHEN bats fly into your house or apartment, do you go after them with a baseball bat, a tennis racket or a fish net? Any of these is the wrong answer, according to animal experts at the Philadelphia Zoo.

Zoo personnel have been answering many phone calls from bat-invaded homes. The zoo's advice: open doors and windows and turn off the lights; the bats will fly out of their own accord.

Bats generally do no harm, but they will bite if you pick them up.

Science News Letter, September 20, 1947

SURGERY

Grasping Ability Restored After Loss of Fingers

➤ A MAN can lose all the fingers and thumb of his hand and still be able to dress, feed himself, and use pencils, hammers and other tools, thanks to an operation reported to the American College of Surgeons by Drs. Bradford Cannon of Boston, Walter C. Graham of Santa Barbara, Calif., and James Barrett Brown of St. Louis.

The operation restores the grasping ability which is one of the most important differences between man and other animals.

In the operation, the bone between the base of the thumb and the wrist is fused to the bone between wrist and base of the forefinger. A cleft is then made between the stump of the forefinger and the stump of the next finger, going down toward the wrist. This gives a thumb which can be brought over against the rest of the hand and used for picking up and grasping things as the normal thumb is used.

Science News Letter, September 20, 1947

MEDICINE

A-Bomb Expert Heads Lab To Study Radiation Injury

➤ STUDIES of means of treating radiological injury to man will be undertaken by a new atomic radiation medical laboratory which will begin operations in October at the University of California at Los Angeles.

Dean Stafford L. Warren, of the Medical School on the Los Angeles campus, will direct the laboratory which will function under a contract with the Atomic Energy Commission.

Medical data collected after the atomic bombings of Hiroshima and Nagasaki and in the tests at Bikini will form the starting point of the project.

Dr. Warren has been closely associated with medical aspects of the atomic bomb since 1943, when he was appointed medical director of the Manhattan project. Later he was in charge of radiological survey parties studying the Japanese cities. He also headed the medical staff at Bikini last year.

Dr. Warren will begin operations with a staff of from 30 to 40 people, and the research will be closely coordinated with similar work being done on the Berkeley campus of the University.

Science News Letter, September 20, 1947

ENGINEERING

Heat from Cold Earth

Refrigeration in reverse uses the heat taken a little at a time from below frost level to warm winter-chilled homes. Same system cools house in summer.

By A. C. MONAHAN

➤ THERE is always enough heat in the cold earth below frost level to make a home comfortable. It has to be gathered in small amounts from the outside and built up within the house to the temperature desired.

Scientists have the know-how. Engineers have developed producing methods. Manufacturers are now turning out house-heating units that use the heat in the outside cold air, of water in deep wells, or the year-round uniform heat of the cold earth buried deep enough so that it never freezes.

Many successful applications over past years prove the scheme practical. The principle used is often referred to as refrigeration in reverse. One advantage is that the system can be used both for heating and for cooling. Mechanical power, usually electrical, is required, but there is no fuel burned in the house.

Electricity can be used for direct heating as in the well-known electric-heaters, but this refrigeration-in-reverse system is much more economical. The electric energy used this way provides from three to five times as much heat.

The science behind the methods of using the heat in outside atmosphere, water or earth in house-warming is not difficult to understand. Those who know how the ordinary household electric refrigerator works already understand. It is based on the heat-absorption that takes place when a liquid is changed into a vapor, and the heat-emission when a vapor is condensed again into a liquid.

Condensation Makes Heat

When vapor, or a gas, is converted into a liquid it gives off heat. Some gases can be liquefied rather easily by lowering their temperatures. All gases can be liquefied by compression, some readily and others with much more difficulty.

When a gas is compressed, its temperature is raised even before it becomes converted into a liquid. This accounts in part for the heat within an automobile tire filled with air under compression, which is increased by the compression of rolling. The action in the household refrigerator, cooling systems in theaters, and in the house-heating by refrigeration scheme, all depend upon alternately changing a liquid to a gas, then back to a liquid again, in a continuing process.

Electric refrigerators give off heat. This is why they operate best in an ordinary room, and not in a closet. They should be set a little away from the wall to permit air circulation behind them. This permits the air to remove the heat, which usually is discharged through the rear.

In the circulatory system in the home refrigerator the refrigerant, the liquid-to-gas-to-liquid again fluid, passes around in a single circuit. In the house-heating system, there may be only one circuit or there may be two. The fluid that picks up the outside heat in the water or the earth may be in a closed circuit, delivering its heat through a heat exchange unit within the house.

In either case, the outside section is buried deep under the ground or projects downward into the water in a deep well. It might seem that the cold earth just below frost level, or the cold water in the bottom of a well, contains no heat. But it does. Everything contains some heat unless its temperature is at what scientists call absolute zero. This is approximately 460 degrees below zero on the Fahrenheit thermometer.

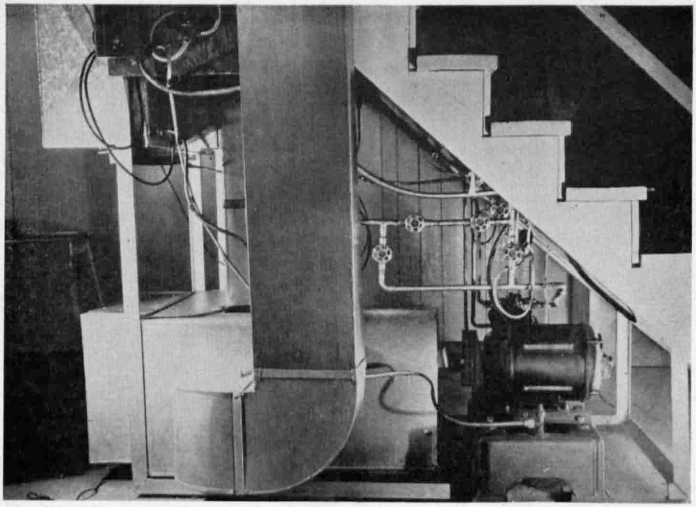
A liquid circulating through a pipe in the earth will pick up some heat, even from the cold dirt, if its temperature is lower than that of the soil. When the little heat gathered on each trip through the earth or water is taken out within the house, it gradually raises the home temperature to a comfortable status.

The Heat Pump

The gadget that does the trick is what is called a heat pump. Compression pump might be a better name. In addition to compressing the gas into a liquid, there must be means to keep the refrigerant in circulation. These are what use the electricity.

A good circulating refrigerant is one that can be easily changed from liquid to gas, or from gas to liquid. Water, however, can be used as a pick-up fluid.

ENCLOSED—This is the Marvair system for heating by refrigeration in reverse.



TYPICAL INSTALLATION—This is a side view of the Terra Temp equipment for getting your heat from mother earth below frost line.

Freon is also used. It is the refrigerant widely used in theater-cooling. It starts into the earth or well water in a liquid form. It picks up enough heat from the earth or water to turn it into a vapor. The gas, within the machine in the house, is compressed, greatly raising its temperature. Then it passes into a condenser where the heated gas is converted into a liquid, giving up its heat to the house.

For summer cooling, the system works in reverse. The heat within the house is picked up by the air-circulating ducts and carried to the soil or water, both of which even in the hottest weather are cooler than the surface air.

There are several types of heating or cooling systems now being manufactured in the United States. One is unique in that it takes its heat from outside cool air. It is a complete unit in an attractive cabinet designed for use in a single room. It is a product of Drayer-Hansen, Inc., Los Angeles, with the trade name of Airtopia.

Air-to-Air

This unit is what might be called an air-to-air device. In heating, it draws in air from outside. This passes over refrigerated coils and gives up its heat. It is then expelled to the outside at a lower temperature than it had when it entered.

The heat taken from the outside air is transferred to other coils within the unit. There it is picked up by room or fresh air circulated in the air-conditioning stream. It is intended for use in relatively mild climates, and has very special advantages. It can heat a room in early morning, and later in the day cool the room during the afternoon's hot sunshine.

Earth-to-Air

The Marvair system, built by the Muncie Gear Works, Inc., Muncie, Ind., is what might be called a water-to-air or an earth-to-air heating method. It has three separate circuits. The first is an underground pipe through which water passes to absorb heat from the earth or from well water. The second is the refrigerator circuit which transfers heat to the air stream and to a higher temperature level. The third circuit is that of the air stream which carries heat to or from the space to be conditioned.

The water circuit is a closed system through which the water is driven by a centrifugal pump. Included in the circuit is a vertical U-shaped tube that projects downward at least 200 feet into the water in a well. One-inch pipe is normally used.

The Marvair system is suitable for homes, offices or small commercial buildings. The unit can be installed in a basement, utility room, or even in a closet.

A third system is of interest because it uses earth heat only, and employs circulating freon as a refrigerant. It is called Terra Temp, and is made by the Terra-Temp Company of Indianapolis. It gets its heat directly from the earth, and dissipates heat into the earth when in use for home-cooling. It can be used in any climate where the outside pipes can be laid three or four feet under the earth's frost level. The climate, however, will determine the size of the unit needed.

This Terra Temp system is more exactly like ordinary electric refrigerators than the others described. In this, the refrigerant, in a cold expanded state, passes through the underground circuit and picks up heat from the ground. The refrigerant is vaporized by the heat absorbed.

The vapor enters a compressor where it is boosted to a higher temperature. The hot vapor then passes over coils where its heat is picked up by an air stream which circulates through the house. The loss of heat from the vapor condenses it to a liquid again, and it continues on its circuit. Automatic thermostatic control will reverse the cycle when needed and the system becomes a cooling instead of a heating unit.

Science News Letter, September 20, 1947

Do You Know?

Chile is planning to produce *copper salts,* having a plentiful supply of the necessary raw material.

Some of the most spectacular of the weird and brilliantly colored formations known as *badlands* are in the Theodore Roosevelt National Memorial park in North Dakota.

Soft field corn can be safely stored and used as *cattle feed* if subjected to artificial drying.

Bulls are generally thought to be the most dangerous *farm animals* but horses account for most livestock accidents.

AGRICULTURE

Corn Driers To Save Crop

Picked before it is fully mature, corn contains too much moisture to store safely in cribs. Conference shows drying machinery can be produced.

➤ CORN ISN'T going to be lost through spoilage in the cribs next winter and spring, if American agricultural engineers and manufacturers of drying machinery can do anything to prevent it. At a conference held on the Purdue University campus in Lafayette, Ind., they looked over specifications laid before them by Wallace Ashby and Arthur W. Turner of the U. S. Department of Agriculture, and answered, "can do."

Corn picked before it is fully mature, as much of this year's crop will have to be, contains too much moisture for safe storage in cribs. In even cool weather it will grow moldy, and the heat generated by this biological process speeds its ruin.

The answer is to dry it out in the crib. Corn is cribbed while it is still on the ear, so that there are chinks and spaces through which currents of warm air can be blown. Temperatures have to be carefully regulated to prevent overheating, and of course the drying process should not be unnecessarily prolonged because it costs money. That is where the agricultural engineers come in. Each region has its own requirements, based largely on climate, so that differences must be adjusted state by state.

A corn drier consists of a burner to heat the air, usually through a heat-exchanger, plus a fan to blow it into the crib, plus of course the necessary housing and ducts. Two sizes, one with a three-horsepower, the other with a five-horsepower motor to operate the fan, were proposed by the Department of Agriculture representatives. Heating may be done with fuel oil, coal or the "bottled gas" used domestically on many farms nowadays. Blower fans are operated preferably by electric motors, but on non-electrified farms, or when motors cannot be had, gasoline engines or even the power take-offs of tractors will be used.

Drying a standard cribful of corn takes from one to three weeks, with the drier operating steadily, day and night. Time required depends, of course, on how wet the corn is, how wet the weather, and how much fuel is available for the drier's heater. Drying can be accomplished with unheated air, under Indian-summer conditions, but usually it is better to run the heater.

Twenty-eight manufacturers, most of them small firms, had representatives at the conference, and several more expressed willingness to cooperate in telegrams and letters. Serious bottlenecks are material shortages, especially sheet steel and electric motors. Since all parts are standard commercial articles, production can be rapid if materials are made available.

The Department of Agriculture intends to purchase one each of several acceptable machines exhibited. As soon as these have been tested by state agricultural engineers and results made known to manufacturers, the way will be clear to start production—if materials can be found.

Science News Letter, September 20, 1947

ASTRONOMY

Supersmall Star Is Satellite to Satellite

➤ DISCOVERY of a supersmall star, only one-tenth of the mass of the sun, was reported to the American Astronomical Society meeting in Evanston, Ill., by Dr. Harold L. Alden of the University of Virginia's Leander McCormick Observatory.

Extremely faint companion of a previously-known faint red star in the constellation of Cassiopeia, the new star discovery was made only because of its effect dynamically on the star system of which it is a minor member.

The visible star to which the supersmall star is a satellite is itself revolving around another star, taking between 250 to 300 years to do so.

Astronomers believe that many faint objects like the supersmall star exist in space. Each is so small that it hardly shines with its own light. Most of them will never be discovered. Only one or two have been found before.

The distance of the faint newly-found star from its companion is about five times that of the earth from the sun.

Science News Letter, September 20, 1947

Ultrasensitive RCA television camera tube cuts studio light requirements 90%

Television finds drama in the dark — with new RCA studio camera

Now television becomes even more exciting as lights are dimmed, and the camera reaches deep inside studio shadows to capture action as dramatic as any on stage or screen . . .

A new studio television camera—developed by RCA scientists and engineers—needs only 1/10th the usual light.

The super-sensitive eye of the new camera is an improved Image Orthicon Tube . . . of the type once used only for broadcasts of outdoor events. With it, studio broadcasts now become sharper, clearer—and since so little illumination is needed, heat in the studio is sharply reduced. No more blazing lights!

Such improvements come regularly from research at RCA Laboratories, and apply to all branches of radio, television, electronics, and recording. These improvements are part of your purchase of any product bearing the name RCA, or RCA Victor.

• • •

When in Radio City, New York, be sure to see the radio and electronic wonders at RCA Exhibition Hall, 36 West 49th St. Free admission. *Radio Corporation of America, RCA Building, Radio City, New York 20.*

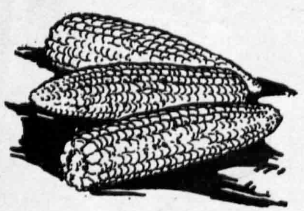
RCA Victor home television receivers bring you every dramatic detail that the new camera catches. RCA's "Eye Witness Television" locks pictures in tune with the sending station. Let your dealer demonstrate.

RCA **RADIO CORPORATION of AMERICA**

ECOLOGY

NATURE RAMBLINGS

by Frank Thone



Survival of the Unfit

➤ AUTUMN is a time for seed-scattering among wild plants, but among cultivated varieties it is a time for harvesting and gathering into barns. In the wild, seed-pods open and shake out their contents as wind and animals rattle the stalks. Ripe burrs catch on the hair or wool of animals—especially, it seems, after we have sheared the latter and are wearing the spoils to clothe our own too-sparsely-covered bodies. Winged and parachuted seeds are taking their final flights down the wind. All the thousand devices that accomplish dispersal are at work.

Only the seeds of grains and other food-plants chosen by man are discouraged from dispersal by every means at the breeder's command. If the heads of wheat or barley or rye break up and let go their grain, as grass seeds naturally scatter, the agronomist reports disgustedly to the geneticist, "This kind shatters!"—and the offending variety is straightway discarded, or at least bred into tight-clinging docility. If bean-pods or clover-heads shed their contents without waiting for the thresher, a like fate awaits the strains to which they belong.

Among the commoner crop plants, probably the one that has most completely lost its ability to let go of its own seed is corn. This has been artificially selected by farmers, both white and Indian, for so many generations that all resemblance to its original wild condition has been lost. And in no respect has its ability to look out for itself been more completely lost than in the way its many-rowed cob clings to the grain. Not even in warmer countries, where the seed would not be winter-killed, does corn escape from cultivation and run wild, as other plants occasionally do.

If man has become greatly dependent on his cultivated plants for his survival, they have become utterly dependent on him. He must thresh out their seeds, saving a part from his ovens and pots to be planted the following year. He must fight weeds, insects and fungus diseases to enable these green vassals of his to survive and reproduce. If a suicidal ~~atomic~~ nuclear Armageddon should wipe out mankind, it would be only two or three seasons at most until practically all of his principal crop plants would be extinct, too.

Science News Letter, September 20, 1947

NUTRITION

Too Much Fat Is Bad

If you habitually eat as much as four big pats of butter every meal, beware of hardening of the arteries, scientist warns.

➤ THIS is a story in favor of Jack Spratt, and it is a bit tough on his wife.

Eat fat to excess and you run the risk of a fatty degenerative kind of arteriosclerosis, hardening of the arteries to you.

Medical scientists have warned against eating too much fat for years. Your doctor may have warned you about it if you are a bit on the plump side.

But this work is not just the old stuff. It is a new warning to excessive fat eaters. It is a warning to those who habitually eat four big pats of butter (about one-fourth cup) or other fat per meal.

Dr. John E. Moreton has been studying arteriosclerosis in Salt Lake City at the Tyree Memorial Laboratory for research on that disease.

He has been making tests on people. And also rabbits and steers. He tells the scientific world in a report to the journal, *Science* (Aug. 29).

When a man eats about two ounces of butter fat, a shower of big fat particles descends on his blood stream about four hours later. It makes it look like the blood picture seen in certain conditions of excess fat in the blood, as in some cases of diabetes. Compared with the blood plasma of a normal person who has been fasting or has eaten a meal without fat, there are both more and bigger fat particles.

When these big fat particle showers descend into the blood stream time after time for many years, so many of them get into the walls of the blood vessels that in time they damage these walls.

It is not just the amount of fat but the physical state in which it gets into the blood that is important, Dr. Moreton emphasizes. He says scientists have in the past missed this clue to the underlying cause of the fatty degenerative kind of arteriosclerosis. They missed it because they only studied the concentration, or proportionate amount, of fat in the blood.

Circumstantial evidence supporting his theory comes from such facts as the rarity of the fatty arteriosclerosis in people eating very little fat, such as the Chinese and Okinawans; the marked decrease of the condition in Germany during the fat-shortage years after World War I; and its more common occurrence in very fat, over-nourished people than in the lean and under-nourished.

One more warning: Check your diet with your doctor before you start changing it. A person with diabetes, for example, may need quite a lot of fat. The doctor, not the patient, can tell how much.

Science News Letter, September 20, 1947

Salt mines, at Blanco de la Republica, Colombia, are to be extended and a plant erected to produce soda ash, caustic soda and chlorine.

Books of the Week

TO SERVE YOU: To get these books, send us a check or money order to cover retail price. For free publications send 10 cents to cover handling. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C.

AIR CONDITIONING—Herbert and Harold Herkimer—*Chemical Pub.,* 692 p., illus., $12.00. Text for students and engineers. It reviews the laws of chemistry and physics, as well as treating in detail the more practical aspects of the field, e.g., costs, installation, equipment, etc.

COLLOID SCIENCE, A Symposium—*Chemical Pub. Co.,* 208 p., illus., $6.00. Series of lectures under the auspices of Royal Institute of Physics and sponsored by Dept. of Colloid Science, Cambridge Univ., dealing with disperse systems including emulsions, foams, colloidal electrolytes and polymers.

THE DEVELOPMENT OF MODERN MEDICINE; an Interpretation of the Social and Scientific Factors Involved—Richard Harrison Shryock—*Knopf,* 457 p., illus., $5.00. Revised and enlarged edition of 1936 work correlating history of medicine and history of public health against background of intellectual and social history in general.

HARNESSING THE RAINBOW FOR YOU—*E. I. duPont de Nemours & Co.,* Wilmington, Del., 8 p., illus., paper, free. An informative little booklet of questions and answers about dyes and the American dye industry.

HUMAN RELATIONS; a Quarterly Journal of Studies towards the Integration of the Social Sciences—*Research Center for Group Dynamics; Tavistock Inst.,* $7.00 per vol. First issue of a British journal devoted to community problems and especially to the collaboration of the various social sciences in relating social theory to social practice.

IF A MAN BE MAD—Harold Maine—*Doubleday*—435 p., $3.00. A former alcoholic tells of his own experiences as a patient and as an attendant in mental hospitals.

NOW TRY THIS—Herman and Nina Schneider—*Wm. R. Scott,* 40 p., illus., $1.50. The second "Let's Find Out" Science Book for young children explains the principles of physics: friction, levers, rollers, wheels, and bearings. Cartoon-type illustrations of familiar examples make it both easy and fun to understand.

ONE TWO THREE . . . INFINITY—George Gamow—*Viking*—340 p., illus., $4.75. Facts and theories of modern science presented in everday language and covering the world of atoms, planets, genes, fourth dimensions and the laws that govern them.

PERSONALITY: A Biosocial Approach to Origins and Structure—Gardner Murphy—*Harper,* 999 p., illus., $5.00. A text for advanced and graduate students surveying the major facts of personality development from point of view of dynamics of growth and normal interaction with social environment rather than upon clinical applications.

QUALITATIVE ANALYSIS AND CHEMICAL EQUILIBRIUM—T. R. Hogness and Warren C. Johnson—*Holt,* 3rd ed., 553 p., $3.20. This text uses laboratory experiments in qualitative analysis to illustrate that basic principle of chemistry, chemical equilibrium. Semi-micro methods are employed.

THE REACH OF THE MIND—J. B. Rhine—*Wm. Sloane Assn.,* 234 p., illus., $3.50. A description of experiments which the author believes demonstrate the reality of telepathy, precognition and the influence of the mind over dice.

SECRET—*Wesley W. Stout*—67 p., col. illus. Free from: *Chrysler Corp.,* Detroit, Mich. Simply written and beautifully illustrated story of the atom bomb and the part Chrysler played in helping science and industry get control over the energy locked in the atom.

UNASYLVA—*FAO Div. of Forestry and Forest Products,* bimonthly, illus., $3.50 per year. First issue of magazine designed to encourage careful management of forests as a world resource by making available the increasingly complex information necessary for wise utilization of the forests and their products.

Science News Letter, September 20, 1947

Insects in containers carried many miles high above the earth's atmosphere in V-2 rockets and dropped to the ground by parachutes seem to have escaped injury either from the tremendous speed or the heat of flight.

NUTRITION

Vitamin Chemical Reported Helps Mothers Feed Babies

➤ A VITAMIN chemical that will help mothers feed their babies better has been discovered by Mohamed El Shahat, biochemist in the medical school of Fouad 1st University at Cairo, Egypt.

Dr. Shahat calls this chemical the "H" lactation-promoting factor, "H" standing for human.

Small doses of it enable human mothers to produce both more and richer milk for their babies. The volume of milk increased in 158 cases by 160% to 900%. The larger increases occurred at the earlier stages of lactation, soon after the baby's birth. The amounts of fat, proteins, sugar, minerals and vitamins in the milk also increased, so that the milk was more nourishing.

The "H" factor was obtained from fenugreek oil. Fenugreek is a plant whose oily seeds have been used for poultices and in veterinary medicine. Dr. Shahat announced his discovery of the "H" factor at the meeting in London of the Eleventh International Congress of Pure and Applied Chemistry.

Science News Letter, September 20, 1947

• New Machines And Gadgets •

If you want 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 380. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

❁ *TABLE LAMP, whose supporting stand glows in the dark, is easy to find even in an unlighted room. The upright column of the stand is made of 14 oyster-like plastic shells, one above the other, each treated with a phosphorescent pigment that causes the glow.*

Science News Letter, September 20, 1947

❁ *COFFEE BREWER, of the vacuum type, is fully automatic. It operates on household alternating current without setting of switches or adjusting levers of any type. The housewife puts water in the lower bowl and ground coffee in the upper; the rest takes care of itself.*

Science News Letter, September 20, 1947

❁ *ELECTRIC VIBRATOR for home use is cased in a light-weight plastic housing, and is shaped for easy holding. Four accessories may be attached to the stem of the vibrator. These are a roller, rubber fingers for the scalp, rubber cup for tired muscles, and a rubber cap for gum massage.*

Science News Letter, September 20, 1947

❁ *CRAFTSMAN KIT, with which the amateur can internally carve beautiful flowers encased in crystal clear plastic, contains everything needed for the job except a small hand-powered tool or flexible shaft. Costume jewelry with internal carving of colored objects can be made by a layman.*

Science News Letter, September 20, 1947

❁ *MINIATURE dynamometer, an instrument to measure force exerted or*

power expended, is a three-inch version of larger types. Said to be the smallest of its kind, it is available in 100, 250, and 500 pounds capacity. Its relative size is shown in the picture.

Science News Letter, September 20, 1947

❁ *MICROSCOPE LAMP, or miniature light for general purposes, gives a cool light intensity from a twin pair of fluorescent tubes in a casing about six inches long. To operate the portable lamp, a plug-in type ballast at the end of a six-foot cord is inserted into a power socket.*

Science News Letter, September 20, 1947

❁ *ACETYLENE GENERATOR, designed by Army Air Forces engineers as a portable device for field use, is used with a standard 55-gallon steel fuel drum to which it can be easily attached. The portable unit which is attached to the drum weighs 48 pounds and has a capacity of about 25 pounds of carbide.*

Science News Letter, September 20, 1947

❁ *PORTABLE light tower and generator unit, designed for night construction projects, is mounted in a truck trailer with the hinged tower in a horizontal position during moving. When erected, the 3,000-watt light tower is 18 feet high; the lights at its top are pivot-mounted and have adjustable beam and spread.*

Science News Letter, September 20, 1947

Question Box

CHEMISTRY

What new use has been found for nylon? p. 179.

ENGINEERING

How can your house be heated by warmth from the earth? p. 186.

MEDICINE

What complication has come from use of penicillin? p. 183.

What success is being obtained with a chemical attack on cancer? p. 180.

NUTRITION

Is a lot of fat good for you? p. 190.

PHYSICS

How may diamonds aid in protecting the lives of atomic workers? p. 181.

What light elements have been fissioned? p. 181.

What practical use of ultrasonic waves is of interest to the housewife? p. 184.

PHYSICS-PHYSIOLOGY

What do scientists hope to learn from use of a radioactive sex hormone? p. 180.

PHYSIOLOGY

How do women's stomachs differ from men's? p. 179.

PSYCHOLOGY

How do boys talented in science compare physically with soldiers? p. 184.

Photographs: Army Air Forces, p. 179, p. 181; H. K. Ferguson, p. 183.