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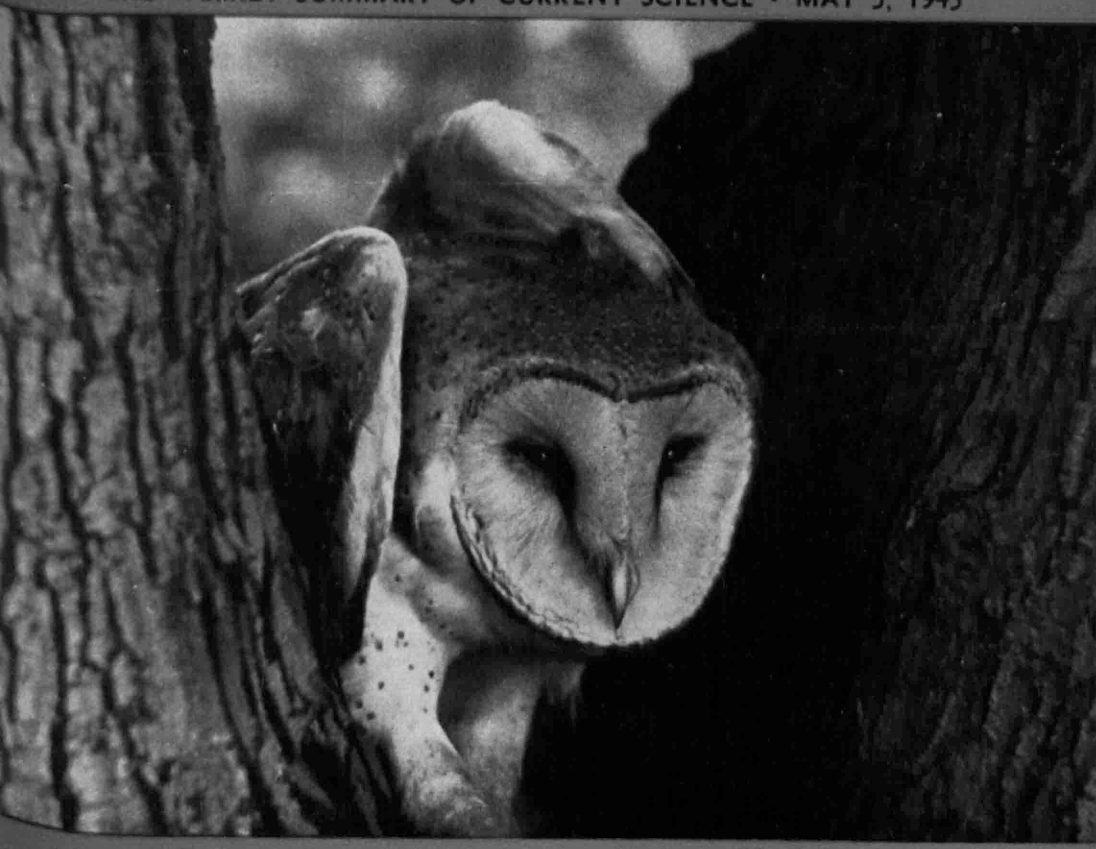
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MAY 5, 1945



Mouse Catcher

See Page 278

A SCIENCE SERVICE PUBLICATION

MEDICINE

Antibleeding Material

Prepared from blood plasma and human placentas, it may be useful in shock, hemophilia and to stop bleeding during operations. Extensive study needed first.

➤ A NEW anti-bleeding material which may be useful in shock, in hemophilia and to stop bleeding during surgical operations is announced by Dr. Alfred Lewin Copley, of the University of Virginia School of Medicine. (*Science*, April 27.)

Before it can be tried in patients with hemophilia, the hereditary bleeders' disease, "extensive studies will have to be conducted," Dr. Copley states.

In the test tube, a small amount of the material rapidly clots hemophilic blood. It also almost instantly stops bleeding from cut surfaces, it was found during operations on animals.

This anti-bleeding material was obtained from blood plasma and also from human placentas. The placenta, sometimes called the after-birth, is the maternal organ from which the unborn child obtains its nourishment. A single placenta yields a large amount of the anti-bleeding substance. The latter is called thromboplastin because it acts, along with calcium, on the prothrombin of the blood to convert it into thrombin. It is thrombin which converts fibrinogen into fibrin to form the clot when blood is shed.

The possible anti-shock usefulness of the anti-bleeding material was discovered when it was used successfully to treat six dogs suffering from peptone shock. This suggests that it may be useful in treating anaphylactic shock, the kind that sometimes comes following injections of horse serum containing vaccines. In this part of the study the thromboplastic substance was used in the form of a protein compound although a protein-free material was also obtained.

Other scientists have previously reported extracts from human placentas with some degree of anti-bleeding material and a more active substance was also obtained from pig's lungs.

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***OLD AND NEW**—At the left is the present-type haversack, with one blanket rolled inside a shelter half and strapped in place, and another blanket rolled into a "horseshoe" and tied on top with a tent rope. The pack has to be taken apart to remove a handkerchief or some other article usually carried inside the bottom roll. The new type field pack, at the right, consists of two separate bags detached and used separately. The new pack rides high on the hips, leaves the arms free for swimming, and can be easily packed in the dark. Official Signal Corps photograph.*

GENERAL SCIENCE

National Academy Elects

Thirty-five distinguished men of science, representing 12 general fields of science, have been elected to the National Academy of Sciences.

➤ THIRTY-FIVE distinguished men of science, representing 12 general fields of science, were elected to the National Academy of Sciences at the annual meeting of the Academy, at which 117 of the 350 members of the organization were present. This is the first time in the history of the academy that 30 Americans, the yearly limit permitted by its charter, have been elected in any one year. Of the 35 elected, five were foreign associate members, from Switzerland, England and Sweden.

Five of the scientists included in the election have previously won Nobel prizes in either physics or chemistry. The two elected members are: Dr. Otto Stern, a German-born American citizen, who is professor of physics at the Carnegie Institute of Technology, who received the Nobel physics price in 1943; Dr. Enrico Fermi, Italian-born American, professor of physics at Columbia University, who was awarded the Nobel physics prize in 1938. Nobelists elected foreign associates are: Dr. Paul Karrer, a Swiss national, who shared the Nobel chemistry prize in 1937 as the result of his working out the chemical formula for vitamin A; Sir (William) Lawrence Bragg, of Cambridge University in England, who shared the Nobel physics prize in 1915; and Dr. Thé Svedberg, a Swedish scientist who was awarded the Nobel chemistry prize in 1926, and who is noted for his developmental work on the ultracentrifuge.

In the field of medical science, seven men were elected to the National Academy of Sciences. They include: Dr. Robert R. Williams, chemical director of Bell Telephone Laboratories, who was the first to synthesize vitamin B_1 or thiamin; Dr. Clarence C. Little, managing director of the American Cancer Society; Dr. Alfred Blalock, professor of surgery at Johns Hopkins University, who is noted for his studies of shock and, more recently, for finding that the muscle weakness disease, myasthenia gravis, can be successfully treated in some cases by the removal of the thymus gland in the chest; Dr. John R. Paul, professor of preventive medicine at Yale University, a disease fighter who has done much work in recent years in tracing infantile paralysis epidemics to learn more about how this disease spreads; Dr. Homer W. Smith, director of the physiological laboratory at New York University, noted for his research on high blood pressure and kidney function; Dr. William C. Stadie, professor of the department of research medicine, University of Pennsylvania, and Prof. James L. Gamble, pediatrician, of the Harvard Medical School.

Only member of the armed services to be elected was Rear Admiral Edward L. Cochrane, chief of the Bureau of Ships,

U. S. Navy, who is well known for his engineering contributions in the design and construction of naval vessels.

The largest group to represent any one field of science were the eight men who represented the biological sciences. This group included: Dr. Harold Hibbert, of New Haven, Conn.; Prof. Ralph Linton, professor of anthropology, Columbia University; Dr. Paul C. Mangelsdorf, well-known economic botanist of Harvard University; Dr. John H. Mueller, professor of bacteriology and immunology at Harvard University; Cornelius B. van Niel, professor of microbiology at Hopkins Marine Station, Stanford University; Dr. John C. Walker, professor of plant pathology at the University of Wisconsin; Dr. Benjamin H. Willier, Henry Walters professor of zoology at Johns Hopkins University; and Dr. Alexander Wetmore, who recently became secretary of the Smithsonian Institution, taking the post vacated by Dr. C. G. Abbot. Dr. Wetmore is noted for his contributions in ornithology.

Head of one of the leading oceanographic institutions in the United States, Dr. Harald U. Sverdrup, director and professor, Scripps Institution of Oceanography, La Jolla, Calif., was elected.

Four physicists and three chemists were elected to the Academy. The physicists are: Dr. Mervin J. Kelly, executive vice-president of Bell Telephone Laboratories; Dr. Eugene P. Wigner, professor of physics at Princeton; Dr. Beno Gutenberg, noted seismologist and professor of geophysics at California Institute of Technology, and Dr. George W. Lewis, director of aeronautical research of the National Advisory Committee for Aeronautics. Under Dr. Lewis' direction some of the most important aeronautical research laboratories in the country have been constructed.

The chemists who were elected are Prof. Henry Eyring of the department of chemistry at Princeton; Dr. Henry Gilman, professor of organic chemistry at Iowa State College; and Dr. Victor K. LaMer, professor of inorganic chemistry at Columbia University.

Head weatherman of the United States, Dr. Francis W. Reichelderfer, who is chief of the U. S. Weather Bureau, was elected to the Academy.

The two geologists who were elected are Dr. John B. Reeside, Jr., of the U. S. Geological Survey and Dr. William W. Rubey, chairman of the division of geology and geography of the National Research Council, which was organized by the National Academy of Sciences.

The sole mathematician of the group elected was Prof. Hassler Whitney of the mathematics department at Harvard University.

Two foreign associates elected were: Dr. Harold Jeffreys, mathematician, of St. Johns College, Cambridge University, and Sir Geoffrey I. Taylor, lecturer in mathematics and physics, Trinity College, Cambridge.

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AERONAUTICS

Tiny Turbosupercharger

➤ THOUGH only as big as a hatbox, a new, compact turbosupercharger will enable airplanes to fly faster and more cheaply and quietly, reported Paul Bancel, engineer of the Wright Aeronautical Corporation, at a meeting in New York of the Society of Automotive Engineers. The new supercharger was described as being lighter in weight, more compact, and more adaptable to aircraft engine arrangements than other types of superchargers.

The new equipment muffles the roar of the aircraft engine to a point where the noise level within the average airliner is sharply reduced, which will have a favorable effect on air transport travelers through reducing passenger fatigue, he explained.

Within its clam-shaped housing, the exhaust gases from the engine turn the turbo's turbine at 25,000 revolutions a minute, to develop a compressing force as great as 150 horsepower. This force spins a centrifugal compressor, which compresses air with enough power to force water through a pipe to the top of a six-story building. This compressed air is fed to the engine for fuel combustion where tremendous power is required. This air is also valuable at high altitudes at which atmospheric pressure is not sufficient to permit an aircraft engine to "breathe" efficiently. The new supercharger provides this current of air without exacting a high toll of horsepower from the engine itself, which is the costly part of operating conventional superchargers.

The turbine in the new supercharger, Mr. Bancel pointed out, was designed to withstand exhaust temperatures as high as 1700 degrees Fahrenheit. This heat is great enough to melt aluminum or magnesium engine parts. Only recently have alloys capable of withstanding high temperatures under stress been developed which can be used in aircraft superchargers. This was one of the primary blocks to the development of jet propulsion and gas turbines in the past.

The new turbosupercharger, Mr. Bancel explained, not only enables the engine to develop cruising power at altitudes of 25,000 feet or more identical to that obtained if the plane were flying near sea level, but it may also be used to pressurize cabins in such planes as the high-flying B-29 Superfortresses.

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PSYCHIATRY

Mental Disease Preventive

Noted psychiatrist sees the possibility of preventing dementia precox by insulin and other shock treatments. Is not a cure-all.

➤ PREVENTION of mental diseases, especially dementia precox, by insulin and other shock treatments, is a "far from fantastic" possibility, Dr. Benjamin Malzberg, director of the Bureau of Statistics, New York State Department of Mental Hygiene, told members of the American Psychopathological Association meeting in New York.

Dr. Malzberg bases this opinion on two facts: Very favorable results are achieved by insulin shock treatment when the disease is of short duration, less than a year or, better, less than six months. Changes in behavior and personality, heralding the onset of dementia precox, can often be detected at an early stage.

Child guidance activities can be extended, he believes, so that "early diagnosis and early treatment may go hand in hand, thereby writing a new page in preventive psychiatry."

Shock treatment, especially that produced by insulin, "brings about more recoveries and more cases of improvement than was formerly the rule," Dr. Malzberg said, citing figures from New York state hospitals.

"Considering that dementia precox was once held to be a deteriorating and incurable condition, this must be regarded as a contribution of the first magnitude.

"Shock therapy does not as yet prevent mental disease," he stated, "but it restores many men and women to levels of usefulness and productivity and thereby lightens the social burden."

It is not a cure-all, many patients do not respond to the treatment and there are many relapses, he said.

Although exceptionally good results may be obtained in some institutions, others report less favorably. The difference in the technique employed for treatment, Dr. Malzberg suggested, accounts for some of the variation in results. On this point he stated:

"The treatment is very rigorous and in many cases it demands great courage on the part of the physician. Consequently, there is often a temptation to stop the treatment even before the essential stages of the coma are realized. This is probably the chief factor influencing the unfavorable treatment in so many cases. In those of our hospitals where the treatment was carried furthest, where the physicians were well trained in this therapy, and recognized the neurological signs developing during hypoglycemia, the results were very favorable."

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Half of Alcoholics Helped

➤ NEARLY HALF, 20 out of 53, patients taking the conditioned reflex treatment for alcoholism in 1942 are still on the wagon, Dr. Joseph Thimann, medical director of the Washingtonian Hospital, Boston, reported at the meeting.

The patient stops drinking as a result of this treatment because the sight, smell and taste of alcoholic beverages have become nauseating to him. He is conditioned to this state through reflex association between alcoholic beverages and the nausea and vomiting induced by a special type of medicine.

The success of the treatment depends partly on following carefully an elaborate technique and partly on proper selection of patients. If the patient has no trouble except his addiction to alcohol, he will be successfully treated. If he is a drinker because of some underlying neurotic condition, the treatment will not succeed by itself but will serve as an aid to psychiatric treatment of the neurosis.

The comparatively low cost of the treatment, which requires a hospital stay of two and one-half weeks, and six reinforcement treatments for one year, was stressed by Dr. Thimann.

The first patient he cited had spent approximately between $13,000 and $16,000 in unsuccessful attempts to get rid of his alcohol addiction, and this did not include his yearly bills for alcoholic beverages or indirect costs, such as time lost from work. In contrast to this, he expended $500 for hospitalization, the conditioned reflex treatment and reinforcements. His record of abstinence following the conditioned reflex treatment is now two and one-half years and both the patient and Dr. Thimann are confident that he will remain abstinent.

The second patient had been arrested for drunkenness 50 times and had been sentenced to the State Prison Farm six times, representing a cost to the community of $733.82, in addition to the expense of the support of his family while he was incarcerated. The conditioned reflex treatment and room and board at the hospital cost $170. The patient has been able gradually to get on his feet financially and contribute to the household expenses, and has been totally abstinent for nearly two years.

Dr. Thimann also reported that 25 of 47 patients treated in 1943 and 24 of 37 treated in 1944 are still abstinent as are the 9 treated in 1945.

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FOOTPRINTS—left in the sand or mud, tell much to the attentive scout concerning people who have recently passed through that region. Our GI boots leave an entirely different impression from those worn by Germans or Japs, as shown in this Cavalry Journal drawing. The barefoot print of an American and Jap soldier can easily be identified. Years of wearing sandals that separate the big toe from the other toes have left their mark on the shape of the foot.

ENGINEERING

Radio-Controlled Robots

May be used in the next war to accompany long-range bombers to fight off numerically superior and faster enemy fighter aircraft.

➤ SLOW AND cumbersome long-range bombers in the next war may have a new weapon to fight off numerically superior and faster enemy fighter aircraft, the radio-controlled robot plane.

Here is how they may be used: A massive four-engine bomber winging its way for a daring raid on the enemy approaches the target for the day. The radar operator already has his eye on the target, though the rest of the crew cannot see it. Minutes later they will have dropped their "eggs" and be on the way home. Suddenly a score of enemy interceptors appears from nowhere. A gunner spots them before they are close enough to open fire. The crew is alerted. Doors in the fuselage are thrown open. Two tiny robot planes are brought out from their stowage in the fuselage and lowered through the fuselage doors. Their wings are then opened and locked in place; the inexpensive, high-powered, three-cylinder gas engines are started; and the planes are released in free but radio-controlled flight.

Directed into the formations of enemy aircraft by radio control, they create havoc, diverting and preventing attacks on the bomber itself. If the enemy is too strong in numbers, the radio operator can adjust a dial, causing the robot planes to emit smoke-screens, surrounding the bomber and clouding it from enemy sight.

Once a target is approached, the deadly cargo of bombs dropped and the bomber safely out of danger from enemy gunfire, the radio-controlled robot planes will destroy themselves by spinning to the ground.

Radio-robots could also carry bombs to be detonated by radio and be directed at well-defended targets on suicide missions without the risk of human life. They could be adapted equally well to protect shipping from aerial attack, but their greatest value would probably be to protect other airplanes.

These predictions are made by Louis Bruchiss, an editor of *Aerosphere,* in a newly published book, *Aircraft Armament.* He states that the radius and duration of action of the radio-controlled robot planes would be intentionally limited. They would carry a gyro pilot, controlled by a robot mechanism set by radio impulses transmitted from the parent ship, as well as several bombs and smoke-screen gas tanks. They would be inexpensive, made of non-durable materials and readily expendable.

Mr. Bruchiss makes clear that they would not be like the flying bombs of this war, since these devices are launched with pre-set controls, and no further control can be exercised over them.

Controllable bombs equipped for radio would cost more than free-drop bombs, he points out, but they would permit bombers to remain well away from their targets when they released their bombs.

Certainly expendable radio-controlled airplanes and bombs would not exceed the value of expensive heavy bombing planes, and they would enable more crews to get back alive.

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BACTERIOLOGY

New Germ Weapon

Studies on athlete's foot suggest that anti-enzyme material might make germs harmless, two University of Maryland scientists report.

➤ A NEW WAY to treat infectious diseases may come from knowledge gained in tests of "sterilized" and unsterilized shoes in connection with athlete's foot.

An anti-enzyme substance which can take the sting out of disease germs by changing them from virulent to non-virulent ones is the possibility reported by J. M. Leise and Prof. L. H. James, of the University of Maryland. (*Science,* April 27.)

Testing for the athlete's foot fungus in the sterilized and non-sterilized shoes, the Maryland scientists needed a culture medium on which the athlete's foot fungus would grow but on which other, harmless fungi found commonly on shoes, floors and the like would not. When the growth medium was made alkaline, they found, only the athlete's foot fungus grew.

Going a step farther, the Maryland scientists found that an alkaline medium permitted the growth of virulent strains of dysentary germs but checked the growth of non-virulent strains of the same germs.

This relation between disease-producing power of a germ and its ability to stand an alkaline medium may be due to the presence of a trypsin-like enzyme or enzyme system, it appears in the light of previous studies. Trypsin is an enzyme from the pancreas which digests proteins.

"If this were shown to be true," the Maryland scientists state, "it would be possible to use an anti-tryptic agent to change a virulent micro-organism into a non-virulent one and thus aid in treating infectious diseases."

Such material from sweetbreads and soybeans has already been suggested as a weapon against the dangerous hemolytic streptococci in studies by Maj. I. Arthur Mirsky of the Army's Medical Corps. The Maryland scientists call attention to these studies which were reported in *Science* last August.

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ORNITHOLOGY

The Barn Owl Is an Excellent Mouse Catcher

See Front Cover

➤ THE ODD-VISAGED bird in the photograph by George A. Smith, on the front cover of this SCIENCE NEWS LETTER, is the Barn Owl. By the look on his face, it is easy to understand why he is often called the Monkey-faced Owl.

He is indeed a queer looking and odd acting feathered creature. He is seldom seen during the day, but when he is found and cornered he has an odd way of leaning forward as he swings his weird face from side to side. No wonder the uninitiated has difficulty in deciding whether to laugh or whether to run. The farmer should be friendly toward this owl. He is an excellent mouser.

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Rosebay *willowherb,* known to Americans as fireweed, together with the Oxford ragwort, cowthistle and ferns, are blooming in the rubble of bombed London.

PSYCHOLOGY

Loosed Aggression

Sickening stories of Nazi concentration camps reveal what can happen when deliberate effort is made to develop the worst in man.

➤ SICKENING stories of the inhuman cruelties in Nazi concentration camps reveal what can happen to the people of a nation when deliberate effort is made to release and develop all the cruel and hateful forces that can exist in man.

It is a belief, particularly in some European countries, that soldiers can fight a war successfully only when both they and the civilians of the nation learn to hate bitterly and cruelly. So, propaganda agencies make a deliberate attempt to whip both soldiers and civilians into frenzies of hatred toward the enemy. When it is impossible, because of defeats, to vent this hatred on the enemy soldiers, it is taken out on helpless victims or minorities—political prisoners, neighbors, almost anyone who cannot defend himself.

Some persons, seeing this hatred being developed in Germany, have criticized our own Army officers for not developing a similar spirit of hatred and blood lust. But experience has shown that American soldiers do not fight best motivated by hatred. They fight best and display the greatest heroism and endurance and military skill when they are motivated by the spirit of loyalty and affection for the nation, their officers and their friends fighting beside them.

American soldiers fight to defend liberty and their loved ones—not to kill and mutilate and destroy.

Psychologists know of no scientific evidence that the Germans are born with any more talent for hatred and cruelty than the people of any other nation. It has been developed in them deliberately by their leaders and is a matter of calculated training from early childhood, not of innate qualities.

Any person has within him the possibilities for hatred and crime and bestial cruelty. But in most persons these forces are constantly balanced by others, equally strong, which make men want to build, not destroy; have friends, not enemies; save life, not kill. Aggressive forces are directed through education against common enemies such as disease, famine, unemployment, poverty and ignorance.

When a man, or a nation, through mental disease or what is believed to be the exigencies of war, sets out to give free rein to all the worst that is in him and suppress all his better instincts, it is very difficult ever to restore the balance again. This warning has been voiced repeatedly by psychiatrists not only in this country but in Europe.

The situation in Germany has undoubtedly been made worse by all the repressions, restrictions of liberty, regimentation and harsh military discipline to which all the people have been subjected. It is known definitely that in human minds such frustration leads always either to aggression or to a dangerous apathy. The human mind is also constituted so that if the aggression cannot be expressed as it properly should be on the oppressors, it easily turns on almost any other object. Usually the hatred and cruelty finds outlet on some helpless victim.

Hope for the future lies in the fact that in Germany as elsewhere in the world, each new baby that is born is a completely new individual. He inherits certain qualities from his parents, but he cannot inherit their bitter and embittering experiences. Education and upbringing will make him civilized or barbaric just as education and upbringing affected the behavior of the men and women of Germany today.

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GENETICS

White Pheasants Born With Few Dark Spots

➤ WHITE pheasant chicks, with only a few dark markings, are being carefully raised in South Dakota. The parents of these eight chicks were two rare pheasants with white markings amid their gray-brown feathers.

Whereas wild pheasants are grayish brown when young, all parts of the body being colored, the spotted chicks are white except for the presence of a few dark feathers on the wings and back. Small brown areas on the legs are also present.

As all of the offspring are uniformly spotted, Dr. Raymond J. Greb of Huron College reported to the American Genetic Association that the spotting may be due to a recessive gene. Spotted pheasants, although occurring but rarely, do persist in the population.

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WHITE PHEASANT—Wild pheasants are grayish brown when young, but this chick is white except for the presence of a few dark feathers on his wings and back. The photograph was taken for the Journal of Heredity.

ENGINEERING

Automatic Door for Home Garages Is Announced

➤ A NEW automatic door for home garages opens and closes without the driver ever getting out of the car. A wheel of an automobile rolling over the contact unit in the runway makes a cable-pull that releases a door-opening weight mounted on the wall when the doors are in closed position. A door-closing weight is released when the doors are in open position, and the doors close after the car is fully clear of the doorway, without slamming.

Motive power for the new non-electric door operator is from the weights, which actuate a driving unit overhead, reports the journal *Prefabricated Homes* in its announcement of the device produced by the Purdy Company in New York.

Of course the doors can be operated by the old-fashioned method, by hand. The contact unit is water-tight, weather-proof and dirt-proof, and will operate satisfactorily under light snow. Deep snow should be shoveled away from the contact unit at the time the driveway is cleared.

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ENGINEERING

Hawaiian Section of S.A.E. Established in Islands

➤ THE FIRST section of the Society of Automotive Engineers to be organized outside continental North America has been established in the Hawaiian Islands, reports John A. C. Warner, general manager of the society. The Hawaiian section will be comprised of automotive engineers on Oahu and neighboring islands and active professionally in an area regarded as an important Pacific route junction of postwar air travel.

The Society of Automotive Engineers was organized in 1905 to represent the interests of all automotive engineers. The activities encompass design, production and operation of vehicles and aircraft in peacetime, and in wartime the developmental research needed for military materiel produced by the automotive industry.

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NUTRITION

Source of B Vitamins in Sunflower Seed Meal

➤ WE MAY be eating cake, bread or rolls made from sunflower seed meal because of its nourishing and culinary values discovered in studies by a husband and wife team, Prof. and Mrs. Harry G. Day, at the Indiana University.

Sunflower seed meal is a good source of B vitamins, Prof. Day and Ezra Levin, of Monticello, Ill., report in *Science* (April 27.) Fed to rats as their only supply of B complex vitamins, it was superior to wheat-germ and corn-germ meals and far superior to defatted soybean meal, but decidedly inferior to brewer's yeast.

At this point in the studies, Mrs. Day joined the team. She demonstrated that sunflower seed meal, which is described in the scientific report as "a light gray palatable powder" could be "satisfactorily blended with white flour and corn meal to make appetizing baked goods."

Although scientists have been searching for new food materials for both animal and human feeding, very little attempt has been made to determine the value of the economically important sunflower, Prof. Day and Mr. Levin pointed out. Meanwhile, sunflower production has been increasing rapidly for the sake of the oil obtained from the seeds.

The residue after removal of the oil has been used for livestock and poultry feeding. It is about half protein. When produced by a low-temperature, solvent extraction process for removing the oil, this protein is in the same class as the protein of oats, wheat and barley, Prof. H. H. Mitchell and associates of the University of Illinois have recently reported. The sunflower seed meal used in the Day-Levin studies was obtained by this extraction process that does not destroy the biological value of the protein.

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MEDICINE

Modern Weapons Against Rocky Mountain Fever

➤ WITHIN recent years scientists have developed two weapons for fighting Rocky Mountain spotted fever. This disease, which is not limited to the Rocky Mountain area as the name suggests, used to kill as many as 85 or 90 out of every 100 who got it. More recent reports put the rate at about 18 or 20 deaths for every 100 cases.

The germ that causes the disease is spread by ticks but the infected ticks usually do not transmit the infection until from two to eight hours after they attach themselves to the body. This fortunate time lag gives a chance to save yourself or your children from the ailment if you practice tick inspection after being in the woods, shrubbery or other tick-infested spots.

A vaccine to protect against this dangerous disease has been developed by scientists of the U. S. Public Health Service. When first made, this vaccine was very costly, not just in money but in lives also, because the scientists and technicians making it had to work with the dangerous infected ticks. Some of them, in spite of precautions, got the sickness and died of it, giving their lives to manufacture protection for others.

The vaccine made at this great cost was, consequently, reserved for ranchers, sheepherders and farmers who had to work in regions where infected ticks abounded. Then a new, safer method of preparing it was found, and this new vaccine is being prepared commercially as well as by the federal health service. If you live in a region where there are infected ticks and your children play out in the grass and underbrush without some grown-up to watch carefully for the ticks and remove them, your doctor may advise you to have the children vaccinated.

If, in spite of being careful to avoid ticks, you should happen to get the disease, your chances of recovering from it are probably better now than they would have been a few years ago. A serum for treating it has been developed and early trials of it were promising.

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IN SCIEN

ENTOMOLOGY

Phenol Compounds Used To Repel Termites

➤ WOOD DESTROYING termites, that cause millions of dollars of damage to American homes each year, are repelled to a degree if the wood is impregnated with certain compounds of phenol, particularly with a copper-chlorine-phenol, Dr. George N. Wolcott, of the University of Puerto Rico, reports. (*Science*, April 27.) The tests are still in progress and will be continued until methods for the more complete control of this pest have been perfected.

Phenol, familiar as carbolic acid, is one of the hydrocarbons obtained in the distillation of coal, or produced by treating benzene with sulfuric acid followed by a treatment with an alkali. Naphthalene for moth balls is made from it. Repeated tests with phenol alone indicate that its effect disappears rapidly, but in heavily chlorinated compounds it is more lasting, and in a copper compound, copper pentachlorophenate, more lasting still.

These tests were made to develop a repellent against the West Indian dry-wood termite known scientifically as *Cryptotermes brevis*. Other coal tar constituents may make more efficient termite repellents, but phenol has a low initial cost.

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PSYCHOLOGY

Untrained Homing Pigeons Fail to Find Way Home

➤ SIX UNTRAINED pigeons that failed to find their way home when released 80 miles distant furnish further evidence that these birds do not have a homing instinct, it appears from studies reported by Prof. C. S. Platt and Robert S. Dare, of the New Jersey Agricultural Experiment Station. (*Science*, April 27.)

Even training the birds over 40 miles of the 80-mile test flight failed to help them materially in finding their way home. Only two of 10 so trained got back, one 30 days later, the other 48 days later.

Of nine birds trained as a group over the territory to be covered by the test flight, six returned home. In further tests it was found that trained birds came home faster when they flew as a group than when they flew individually.

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CE FIELDS

CHEMISTRY

Sodium Silicate Bounces Like a Rubber Ball

➤ CONCENTRATED sodium silicate solutions show the same physical properties as "bouncing putty," a by-product of the research that developed silicone rubber, D. L. Hanna of the Illinois State Geological Survey states, (*Science*, April 20). Sodium silicate, commonly sold under the name of water-glass, is widely used in thin solutions as an adhesive and for the preservation of eggs.

The "bounceability" of concentrated sodium silicate was discovered by chance in an overlooked laboratory solution, that had slowly dried to about 54% water content.

The concentrated material was a transparent rubbery liquid. When shaped into a ball it was bounced off a hard surface like so much rubber. It was not sticky and could be bounced off a surface of the same material. It retains its ability to bounce indefinitely if prevented from losing additional water. If unprotected and left in the air, it dries out rapidly and becomes brittle.

Bouncing putty, which looks and feels like ordinary putty, was discovered in research work in developing silicone rubber. It can be pulled and kneaded like putty, and when made into a ball and dropped on the floor bounces like rubber.

Silicone rubber is a relatively new type of synthetic rubber in which silicon replaces carbon. It belongs to the new chemical family of silicones. It possesses important advantages over synthetic and natural rubber in several ways. It withstands relatively high and low temperatures and the action of ultraviolet rays. It is a development of the General Electric Company, now serving the war effort but with many possible postwar uses.

Science News Letter, May 5, 1945

BIOCHEMISTRY

Immunity Intensified by Complement in Blood

➤ IMMUNITY to disease is intensified by a substance in blood known as complement, Prof. Michael Heidelberger, of Columbia University, told members of the Vermont Sigma XI Club in Burlington, Vt.

Blood complement, he said, is also a chemical curiosity and a diagnostic drudge.

"Freshly drawn blood is an extraordinarily complicated and unstable conglomeration of cells and dissolved materials," he explained. "After it clots, the clear serum which may be drawn off is found to have unusual properties. These are ascribed to complement, or alexin, an unstable complex of serum constituents. Complement is removed from the serum by many immune reactions; that is, in the combination between antigens and antibodies.

"Antigens are foreign substances or particles such as bacteria, which penetrate to the body fluids and tissues and stimulate the system's defense mechanism to produce other substances known as antibodies. Antibodies are able to combine specifically and selectively with the antigen giving rise to their stimulation.

"When this defense mechanism of the body has begun to act on invading microorganisms and the antibodies have combined with the disease-producing cells, complement often swings into action by actually dissolving the germ-antibody complex or by speeding up its disposal and digestion by the scavenger white cells, or leucocytes, of the blood.

"Similarly, complement causes solution (hemolysis) of red blood cells which have combined with antibodies. On this behavior are based diagnostic tests, such as the Bordet-Wassermann reaction, which are used on a vast scale all over the world as a test for syphilis. Another such 'complement fixation' test is useful in the study of virus diseases, such as influenza. Another has limited application in malaria."

Science News Letter, May 5, 1945

PSYCHOLOGY

U. S. Psychologist Will Start Department in Brazil

➤ DR. OTTO KLINEBERG, Columbia University professor of social psychology, who is prominent in the field of the psychology of races and peoples, has been invited to go to Brazil as exchange professor to teach graduate students and to start a department of psychology at the Escola Politecnica of Sao Paulo. He is the first psychologist to go from the United States to Brazil on an exchange basis.

Dr. Klineberg will receive a supplementary grant for this work from the U. S. Department of State, as part of the State Department's program for facilitating such exchanges.

Science News Letter, May 5, 1945

INVENTION

Towing Cable, Fuel Hose Combined to Draw Gasoline

➤ TO THE government are assigned rights in patent 2,374,249, on a combination towing cable and fuel hose, the invention of Maj. Joseph F. Wadsworth, Jr., of the Army Air Forces. It is intended for use in drawing gasoline out of a towed glider, for the engines of the towing airplane. A flexible hose, of fairly conventional type, is surrounded with a sheath of fine but strong wires, suitably secured at either end to swiveled coupling hooks.

Science News Letter, May 5, 1945

PHYSIOLOGY

Starvation Believed Result of Atrophy

➤ STARVATION death of the type found in German prison camps results from wasting or shrinkage of crucial organs of the body to the point where they cannot come back.

Atrophy is the medical term for such wasting. It is the only condition that has been found in the few studies that have been made on the bodies of animals or humans that died of starvation without other complicating condition.

After fat stores are used up and muscles have wasted away, the various organs of the body shrink as the body uses up its own tissues for nourishment and heat. The central nervous system and the heart live at the expense of the other organs and parts of the body.

So long as the heart is still beating, it might be supposed that victims of extreme starvation could be saved by food. If the organs have shrunk too far, however, they may be unable to use the food.

Predigested protein, sugar, salt, vitamins and water can be fed by injection into a vein and this method has been used to nourish patients temporarily unable to eat. Whether this would save the Nazi victims found dying of starvation is not known. This method of feeding by-passes digestion in the stomach. It would not succeed if the liver was too far gone to take care of the nourishment.

With the shrinkage of the stomach and other organs in starvation there is probably also a decrease in the enzymes necessary to digestion and utilization of food. These enzymes are extremely complex proteins and by the time the body is living on its own tissues for its protein supply, the supply of these enzymes is probably greatly reduced.

Science News Letter, May 5, 1945

CHEMISTRY

New-Age Wood

It is now entering new fields of usefulness as processes enable it to perform tasks never before possible. New methods make wood harder, stronger and fireproof.

By WATSON DAVIS

➤ WOOD—the stuff from trees—has grown a long way from the log cabins of our pioneers, the quartered oak of the gay 90's, or even the smoothly planed lumber of just before Pearl Harbor.

Wood is entering new fields of usefulness as new processes enable it to perform tasks never before possible. In the postwar world sticks of timber will be shot full of strengthening plastic, sliced into thin layers and welded together, squeezed into metallic hardness, converted into lustrous resin, made into a superpaper as strong and useful as aluminum sheet, injected to resist fire and decay, or dyed internally and externally with colors of the rainbow.

From the forests can now be obtained fibers that rival the wool from the backs of sheep. Trees can now yield food and drink (alcoholic) for man, beast and industry. Fortunately we can use our lumber and have these other things, too. Because wood wool comes from unused bark, and floods of chemicals may come from sawdust and shavings.

Chemists predict that the usefulness of cellulose (used for paper, rayon, explosives) may even be exceeded by another part of the wood, lignin it is called, that has been allowed to flow down our rivers as troublesome, black, gooey waste from paper-making and chemical wood processing.

The lumberman of the future will add processing plants and factories to his crews of loggers and sawmills. The scientist has cried "Timber!" and his new discoveries and inventions are crashing among us to give us new things for home and work-a-day world.

There is one new process that makes, for example, maple as hard as ebony.

Processed Wood

The new processed wood is what nylon is to cotton. For certain finishes carpenters will ask for "urwood" or "uralloy" or whatever name is adopted, instead of just a piece of wood.

In selecting the postwar furniture, the tag may be expected to read something like: "This furniture is made from processed wood that will not swell, shrink or warp. It will give good service anywhere, even in tropic jungles or arid deserts."

Doors and bureau drawers that will never stick in muggy weather or rattle during dry spells will be a welcome result of the new transmuted wood that keeps its shape no matter what the humidity.

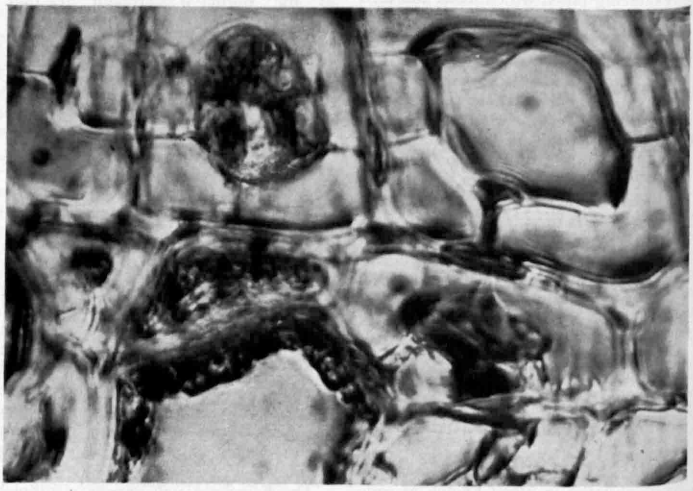
The trick is to combine with the natural wood one of the new kinds of plastics, which itself can be made in part from wood, although it usually isn't. This methylolurea, which sounds complicated but really isn't since it is a white solid, soluble in water, is made from ammonia (familiar as a kitchen cleaner), carbon dioxide (which you exhale every few seconds), and methanol (the non-drinkable "wood alcohol" as it used to be called when it was made from wood as it isn't always now).

Wood soaked under pressure in a solution of this chemical has formed within it hard and water-insoluble resins which occupy the wood cells and even the cell walls. Heated at this stage the wood can be twisted and bent into any desired shape, which is held permanently when cooled.

Soft, weak, fragile woods become hard, strong and stiff. California redwood and tidewater cypress with their lovely grain, color and texture, can be made sturdy and overcome the softness, virtues that become disabilities for some uses. Low-cost softies of the lumber world when transmuted become competitors of prized hard maple, oak and walnut in their natural state. The hard woods of our forests when urea-alloyed serve like the dense tropical timbers imported from distant lands.

Beautiful colors that no tree ever dreamed of can be infused permanently through the wood. Colorful wood to match any decorating scheme without recourse to paint is the result. Tough, scar-resisting colored floors matching the rugs or the room tone are now possible.

Other wood you will be using and seeing will be built up of thin sheets and small pieces, stuck together with various



CLOSE-UP—This piece of wood, magnified about 3,000 diameters, shows the process of impregnation with dimethylolurea. The dark substance at lower left in the picture is the synthetic resin-forming material, which is impregnating even the cell walls. At upper right it is shown passing to an as yet unoccupied cell.

FOR BETTER SERVICE—A compregnated wood propeller, which has an extremely hard surface and is undamaged by water, is being taken from the mold.

glues, resins and "gunks." These are the plywoods, veneers, and laminates of yesteryear, vastly improved and remodeled. Ordinary plywoods of the past were suitable for indoor use out of the wet. Modern plywoods are the weather-resisting material of war craft, such as our own PT boats. The binders are now synthetic resins that set under heat and pressure and make a joining that is stronger than the wood itself.

The development of phenolic resin glues which resist moisture and weather has made possible large structures of laminated timber, such as bridges and blimp hangars.

Veneer and Base

In the household and factory of tomorrow wood will be used both as veneer and base material of almost everything from walls to kitchen sinks. Wood sheets as thin as 1/48 inch can be cemented to steel, aluminum or other sheet metal and the combination bent, cut and stamped. This wood-faced metal will be used in paneling for walls in offices and homes, airplane cabins, stream-lined trains and even automobiles. And turn about, it is possible to bond a thin stainless steel sheet to a birch plywood base to make such things as a modern kitchen sink that will be dent-free and lighter than the conventional sort at about three-fifths the cost.

Sandwich wood, which uses one kind of wood for a core and another for surfacing, will find new uses for wood. Already light balsa wood sandwiched between a hardwood veneer is used in building the British Mosquito bombers, and a similarly fabricated board may insulate your future home.

The astonishing new method of gluing almost anything to anything else, called "cyclewelding," works on wood as well as metal. When it is no longer needed to replace rivets by the millions in warplanes, it will revolutionize many construction methods in peacetime production.

Termites, insidious molds, and that carelessly abandoned highball glass do not harm the kind of built-up wood called "impreg" by the scientists of the U. S. Forest Products Laboratory who figured it out. Sheets of veneer are impregnated with a water solution of phenolic resin-forming chemicals, and then bonded together with heat.

This impreg, squeezed to half its size during the heating process, changes into "compreg," a sturdy product used in the war for airplane propellers, plates that must carry heavy loads and tool parts in aircraft factories. Because compreg has a naturally highly polished, extremely hard surface, undamaged by water, alcohol or mild acids, it promises to appear in the future in fine furniture, tables, the tops of bars and flooring.

Wood which will always retain its compressed thickness when the atmospheric moisture has dried out is made by bottling up in the wood when it is compressed the desired amount of moisture. Called "staypak," it is stronger than all compregs.

Then there is "papreg" made of resin-impregnated layers of paper pressed together, so strong that it is competing with aluminum sheet metal in planes and ships. This improved paper, made from wood, becomes a new building material.

The cellulose of wood, used as paper, cellulose transparent sheeting, rayon and a thousand other chemical products in war and peace, has lignin as a partner in the tree. This lignin is the binding material of the wood and millions of tons of it have been wasted. Soon the chemist will find this discarded stuff a source of riches as useful as cellulose itself. Already it is used in making a low-cost black plastic.

The sawdust and shavings, still too often burned or allowed to rot, are a valuable raw material for industry. From a ton of wood waste can be made 50 to 60 gallons of ethyl alcohol needed for synthetic rubber (or any other use) along with three gallons of fusel oil and 600 pounds of that mystery chemical lignin. Or approximately 500 pounds of yeast with its protein food value can be secured from one ton of wood waste along with other byproducts. (*Turn page*)

Do You Know?

To foster its commercial *fishing* industries, Chile has established a training school for fishermen.

Stainless steel *coffee bowls,* made by the spinning process, are used by the Navy.

An *iron ore* deposit near Asswan on the Nile river 600 miles from Alexandria contains over 13,000,000 tons; plans for its use are under consideration.

Prior to 1883 each town kept time reckoned from its own local *meridian;* thus no two places kept the same time unless they were on the same meridian.

It has been recommended that roofs of barns be painted a *light color* for the summer months, to make it cooler for the livestock occupants.

Capacity for making synthetic *nitrogen* products has increased so greatly in the United States during the war that imports of nitrates from Chile may be eliminated after the war.

ENGINEERING

Tiny Electric Motors

Of tremendous strength, they perform heavy-duty control jobs aboard aircraft, such as pumping fuel and air and operating propeller-feathering mechanisms.

➤ ALTERNATING current electric motors of small size but tremendous strength which perform heavy-duty control jobs aboard aircraft, such as pumping fuel and air, operating propeller-feathering and wheel-retracting mechanisms, were described by Ray G. Holt, of Pesco Products Co., Cleveland, at a meeting of the Society of Automotive Engineers. The motors he referred to are three-phase 400-cycle 208-volt.

Power packages consisting of small electric motors and attached mechanisms, some of "flea power" size and only an inch in diameter, have been made available for use both with electric and hydraulic aircraft control systems, Mr. Holt stated. The power packages are located near the devices they provide the power to operate and help solve the serious engineering problem of transmitting great power over long distances in military aircraft.

Science News Letter, May 5, 1945

Wirings Need Change

➤ ELECTRIC power in military aircraft now must meet the needs of remote control operations, heated flying suits, turbo-superchargers, automatic pilots, radar and other devices which make it impossible to pattern aircraft wiring systems after those of motor vehicles, reports Capt. R. J. Lusk, of the Air Technical Service Command at Wright Field, to the meeting.

Protection of military aircraft electrical systems is becoming increasingly necessary as operation, and even flight, become almost completely dependent upon electric power, he explained. Power sources must not be overloaded by faulty currents and distribution circuits must be kept operable under all conditions. He recommended the use of polarized circuit breakers, and the redesign of system layouts for protection against faults.

Science News Letter, May 5, 1945

Oil Loss Curbed

➤ LOSSES of lubricating oil through aircraft engine breather systems, particularly during cold weather and combat operations, sometimes totaling several gallons a minute, can be effectively prevented by installing air-oil separators, it was reported by M. L. Edwards, of Thompson Products, Inc., Cleveland, at the meeting. Results of tests with the air-oil separator show that oil losses can be curbed to thousandths of a gallon per hour.

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From Page 283

A Cinderella of the forests may be found in a blanket you buy or a coat or felt hat that you will be wearing. In the bark of some of the oldest and largest trees on the face of the earth, the redwoods or Sequoia of California, there is fiber that can be used to replace 15% to 60% of the wool used in some fabrics. The short, kinky redwood fibers blend readily with sheep's wool. That old joke about wooden overcoats needs revising.

We have not come to it yet, but wood can be placed on the dinner table if the need should arise. The Germans are using wood to make cattle food. A weak acid treatment turns cellulose into sugar. That is a step in that chemical use of wood waste. Since sugars derived from wood can be made into yeast or alcohol, wood can yield two kinds of food—sugar and yeast. And drink as well, as there is the alcohol.

All of which is quite a distance from the rough boards of your back fence or the sawdust on the floor of your butcher shop.

Science News Letter, May 5, 1945

AGRICULTURE

NATURE RAMBLINGS

by Frank Thone

Curving Furrows

➤ PRESIDENT TRUMAN'S mother is reported as having boasted that her son, when a young farmer in Missouri, could plow a straighter furrow than any other man in the community.

Plowing a straight furrow was once regarded as the true test of a man's competence as a farmer, just as a squarely-sawed cut across a board proved his skill as a carpenter or sewing a straight seam showed a woman's ability as a seamstress. There was a feeling, too, that it was something more than a simple demonstration of skill—that it somehow portrayed character as well. The straight-furrow farmer's signature was good at the bank, his credit good at the store; if he ran for office, people would vote for him.

Times change. It still takes as much skill and strength as ever to guide a plow along a straight furrow, and the young farmer who can do so today may well be as worthy a person as his father was before him. But on anything but flat land, straight furrows are now considered a sign of bad farming.

If you plow straight furrows up and down a hillside field, regardless of slope, you are laying out channels for the downrush of runoff water from summer rainstorms and fast-thawing winter snow. You thereby lose much of the water that should soak down into the soil and benefit your crop. Worse still, you invite the fast-flowing runnels to carry away the topsoil that is the very flesh of your farm, and to gnaw down into the subsoil and start cancerous gullies that will eventually ruin both your and your neighbors' upslope.

The newer agricultural orthodoxy is to plow curving furrows, keeping them always on the same level along the side of the hill—what the geologist and the engineer call the contour-line. Furrows so plowed become water-traps, delaying the downflow of the runoff and coaxing a great part of it to stay in the soil and feed the roots of the plants. If it is necessary to farm slopes of more than the most moderate steepness, you are expected to go even further, and construct flat-topped terraces, on top of which you will raise your row-crops, keeping their slopes permanently sodded with the soil-clinging fingers of grass roots.

Plowing curving furrows of this kind is really more of a test of a man's farming skill than keeping to the straight beeline of our forefathers. The old straight-furrow farming was a two-dimensional job, an exercise in simple plane geometry. But to hold a furrow to the same horizontal level around the side of a curving hill introduces a third dimension, and a complex one at that; you are having to solve a problem in applied conic sections.

Science News Letter, May 5, 1945

ENGINEERING-ORTHOPEDICS

Better Artificial Limbs

The nation's top engineering and surgical talent is now at work on the job of developing the best possible artificial arms and legs for war veterans.

➤ THE NATION'S top engineering and surgical talent is going to work on the job of developing the best possible artificial limbs for our war veterans. For the first time, engineers and surgeons will tackle the problem together in a large-scale, organized effort.

All types of artificial limbs that have been developed in this country and in England, Russia, South Africa and elsewhere, will be studied by a newly established committee of the National Research Council. In addition to searching for the best features now available, the committee may through its own research develop new, still better, mechanisms.

The committee was created by the National Academy of Sciences and the National Research Council at the request of the Surgeon General of the Army, following a meeting of representatives of the Navy, Veterans Administration and limb manufacturers, as well as of the Army. Chairman of the committee is Dr. Paul E. Klopsteg, professor of applied science at Northwestern University and director of research of the Northwestern Technological Institute.

The Army at present does a custom job of contouring and fitting the artificial legs, arms, hands and feet it supplies wounded soldiers. But it buys certain raw materials and prefabricated parts. Its new specifications call for the best joints available, but it is hoping for something still better. Joints for artificial limbs are not yet of as high a type as the joints found in airplanes, it is pointed out.

Fit, weight, durability, maintenance and repair are other problems to be considered by the new committee. The Veterans Administration would like to be sure, for example, that if a veteran gets a leg in New York City and then moves to El Paso, Texas, he can get repairs for it there without difficulty.

The Veterans Administration has contracts with about 150 artificial limb manufacturers. Where possible, the limbs for veterans in its 94 hospitals are bought from manufacturers in the region of each hospital. This simplifies the problem of repairs to some extent but there are always cases of veterans needing service while travelling if they have not moved from the region.

Each manufacturer at present has patented the special features of his product that are unique to it. For the Veterans Administration, which makes very few artificial limbs, it would be desirable to have a reciprocal agreement worked out so that manufacturers might use each other's patented features to develop satisfactory limbs for veterans.

One of the aims of the new committee is to bring about as much standardization as possible in parts and mechanisms, to assure simplification of maintenance and repair.

Serving with the chairman are the following committee members: Dr. Harold Conn, surgeon-in-chief, Goodyear Tire & Rubber Company, Akron, Ohio; Mr. Mieth Maeser, research engineer of the United Shoe Machinery Corporation, Beverly, Massachusetts; Dr. Paul B. Magnuson, chairman of the department of bone and joint surgery, Northwestern University Medical School, Chicago; Dr. Robert R. McMath, director of the McMath-Hulbert Observatory of the University of Michigan; Mr. Edmond M. Wagner, chief of the engineering section of the National Defense Research Committee, Washington, D. C.; Dr. Philip Wilson, clinical professor of orthopedic surgery, College of Physicians & Surgeons, of Columbia University, New York.

Dr. Charles F. Kettering, head of General Motors Research Division, Detroit, and Dr. Roy D. McClure, chief surgeon of Henry Ford Hospital, Detroit, are consultants to the committee.

The operating headquarters of the Committee are at Northwestern University, Evanston, Ill.

Science News Letter, May 5, 1945

CHEMISTRY

Herty Medal Will Go to Dr. Paul Magnus Gross

➤ THE HERTY medal will be presented May 5, at the Georgia State College for Women by the Georgia State Chemical Society to Dr. Paul Magnus Gross, head of the department of chemistry at Duke University, for his work in physical chemistry and his research in the dipole moments of molecules, sulfa compounds and tobacco.

This medal is a memorial to honor Dr. Charles Holmes Herty, who was born in Georgia and who during his life carried out notable chemical research that resulted in the establishment of a great paper-pulp industry in the South. He also promoted the turpentine industry by discovering a process of increasing the flow from southern pines.

Science News Letter, May 5, 1945

Books of the Week

➤ THE HOPI WAY, by Laura Thompson and Alice Joseph, is a sympathetic study of one of the most interesting of Southwestern Indian peoples, telling wherein they have been able to hold their own culture against white-man pressure, but also showing wherein they have found it worth while to deal with the outsider and to adopt some of his innovations. Photographic illustrations are superb. (*Univ. of Chicago Press*, $3.)

Science News Letter, May 5, 1945

➤ WEATHER-CONSCIOUSNESS has been forced on us by the war; but the coming of peace will not permit present interest in the subject to lapse. If anything, the postwar world, with its expected freer and more rapid communication and travel, will make us more concerned with the weather than ever. For oncoming classes in weather science, two new texts are worth prospective teachers' investigation: H. C. Willett's DESCRIPTIVE METEOROLOGY (*Academic Press*, $4), and George J. Brands' METEOROLOGY, A PRACTICAL COURSE IN WEATHER (*McGraw*, $2.50).

Science News Letter, May 5, 1945

➤ NUTRITIONISTS, food chemists and all who have to do with the technology of food will find substance worth their effort in C. H. Bailey's THE CONSTITUENTS OF WHEAT AND WHEAT PRODUCTS (*Reinhold*, $6.50). The nitrogenous constituents of wheat, and its vitamins, are given especially detailed treatment; the chapter on minerals also is noteworthy.

Science News Letter, May 5, 1945

➤ VETERAN of many years of close observation of climatic phenomena, Prof. S. S. Visher has put into his CLIMATE OF INDIANA the distillation of all his voluminous data. The result is truly monumental. The book might well be held up as an example of what ought to be done for each of the other 47 states—only there aren't 47 more Vishers. Of especial interest to the non-professional student will be the chapters on the relation of climate and physiography, on the effect of weather on crops, and on the influence of climate and weather on health. (*Indiana Univ.*, $4.)

Science News Letter, May 5, 1945

➤ A DISTRACTED WORLD seeks order; and order requires moral sanction if it is to be firmly established. This makes timely reading of Louise Saxe Eby's THE QUEST FOR MORAL LAW, a compact review of, and commentary upon, the moral thinking of the world's most influential minds, from Confucious and Socrates down to the present. (*Columbia Univ. Press*, $3.25.)

Science News Letter, May 5, 1945

Just Off the Press

ASTRONOMICAL NAVIGATION WITHOUT MATHEMATICS—A. L. Mieville—*Macmillan*, 25 p., paper, illus., 65c.

DEMONSTRATIONS AND LABORATORY EXPERIENCES IN THE SCIENCE OF AERONAUTICS, a Guide for Teachers and Students—Prepared with the Cooperation of The Civil Aeronautics Administration and the American Council on Education—*McGraw*, 155 p., illus., $2.

FOOD FOR THE WORLD—Theodore W. Schultz, ed.—*Univ. of Chicago Press*, 353 p., illus., $3.75.

GREEN CARGOES—Anne Dorrance—*Doubleday*, 187 p., $2. The transportation of plants and seeds from the four corners of the earth.

THE MARIHUANA PROBLEM IN THE CITY OF NEW YORK, Sociological, Medical, Psychological and Pharmacological Studies—Mayor's Committee on Marihuana—*Cattell*, illus., 220 p., $2.50.

THE MOSQUITOES OF NEW JERSEY AND THEIR CONTROL—Thomas J. Headlee—*Rutgers Univ. Press*, 326 p., illus., $4.

THE NATURE OF THE BEAST, a Popular Account of Animal Psychology from the Point of View of a Naturalist—Ruth Crosby Noble—*Doubleday*, 224 p., illus., $2.75.

NICHOLAS COPERNICUS, A TRIBUTE OF NATIONS—Stephen P. Mizwa, ed.—*Kosciuszko Foundation*, 268 p., illus., $5.

THE OXFORD WAR ATLAS, vol. III, the War in 1943—Jasper H. Stembridge—*Oxford*, illus., $1.50.

PERENNIALS PREFERRED—Helen Van Pelt Wilson—*Barrows*, 256 p., illus., $2.75. Plans for a perennial flower garden and advice on how to maintain it.

REPORTS OF THE BIOCHEMICAL RESEARCH FOUNDATION OF THE FRANKLIN INSTITUTE, vol. VII, 1942-1943—*Franklin Inst.*, illus., $3.50.

RESEARCH, INVENTION AND PATENTS—Andrey A. Potter—*Industrial Research Inst.*, 8 p., paper, free.

ROCKETS, DYNAMATORS, JET MOTORS—A. L. Murphy—*Wetzel Pub. Co., Inc.*, 169 p., illus., $2.50.

SCIENCE IN PROGRESS—George A. Baitsell, ed.—*Yale Univ. Press*, 331 p., illus., $3., 4th series.

SCIENCE YEAR BOOK OF 1945—John D. Ratcliff, ed.—*Doubleday*, 224 p., $2.50.

TRANSACTIONS OF 1944, OF THE AMERICAN GEOPHYSICAL UNION — *Nat. Research Council*, paper, part II, $2.; parts III & IV, $1.50 each. Part II: Reports and papers of the General Assembly, Section of Geodesy, Section of Seismology, and Eastern Section of Seismological Society of America, & minutes of meetings. Part III: Reports and papers, Section of Meteorology. Part IV: Reports and papers, Sections of Terrestrial Magnetism and Electricity, Oceanography, Volcanology, and Tectonophysics.

VETERAN'S GUIDE—Dallas Johnson—*Public Affairs Comm.*, 32 p., paper, illus., 10c, (Public Affairs Pam., no. 102).

Science News Letter, May 5, 1945

Matches have been made with a non-poisonous sesqui-sulfide of phosphorus since 1911, when the formula was discovered by William A. Fairburn and made available to match manufacturers; poisonous phosphorus had been used previously.

•New Machines and Gadgets•

➤ *CONTROLLED heat in electrically heated sleeping blankets for wounded soldiers in airplanes is obtained by an automatic control device that operates with temperature changes. As the outside temperature goes down, more electric energy enters the blanket coils; in rising temperatures the input decreases.*

Science News Letter, May 5, 1945

➤ *MECHANICAL handler for fence posts, railway ties, pulpwood logs and cordwood, resembles a steam shovel. Slightly curved arms replace the scoop of the earth remover. They are pushed under the piled material and, when raised, pick up a heavy load and dump it into a truck.*

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➤ *POCKET-SIZE electric tester, to test currents in livestock fencing or in electric fences around factory and other buildings, consists of a flat plastic case containing a small lamp that flashes with each shock impulse. It has a metal contact terminal at one end, and a ground wire at the other.*

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➤ *WATER PURIFIER, to deliver mineral-free water by a filtration process, uses melamine-derived ion-exchange resins. The picture shows a portable bench unit. Water is passed through beds of*

these resins, which transform the salts dissolved in it to the corresponding acids and absorb the acids.

Science News Letter, May 5, 1945

➤ *REMOVABLE charcoal kiln, made of cinder cement blocks, is used to replace the portable steel kiln. The blocks, laid with lime mortar and a little cement, are easily taken down for reuse. By regulating incoming air and chimney draft, coaling takes place evenly through the fuel.*

Science News Letter, May 5, 1945

➤ *HUMIDIFIER for cigarets, a cigaret-size gadget to stick inside the ordinary package, is a tube with a small water reservoir at each end, and a connecting wick that passes through a perforated center section of the tube. Moisture escapes from the wick to humidify the tobacco.*

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➤ *WATER TANK, for use in combat areas, is a collapsible tub-shaped bag made of glass fiber coated with synthetic rubber. It is held upright with wood staves. Guy ropes hold the staves in position when the tank is empty. It can be folded compactly and transported easily, and the material adds no taste to the water.*

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If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 257.*

Question Box

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GENERAL SCIENCE

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