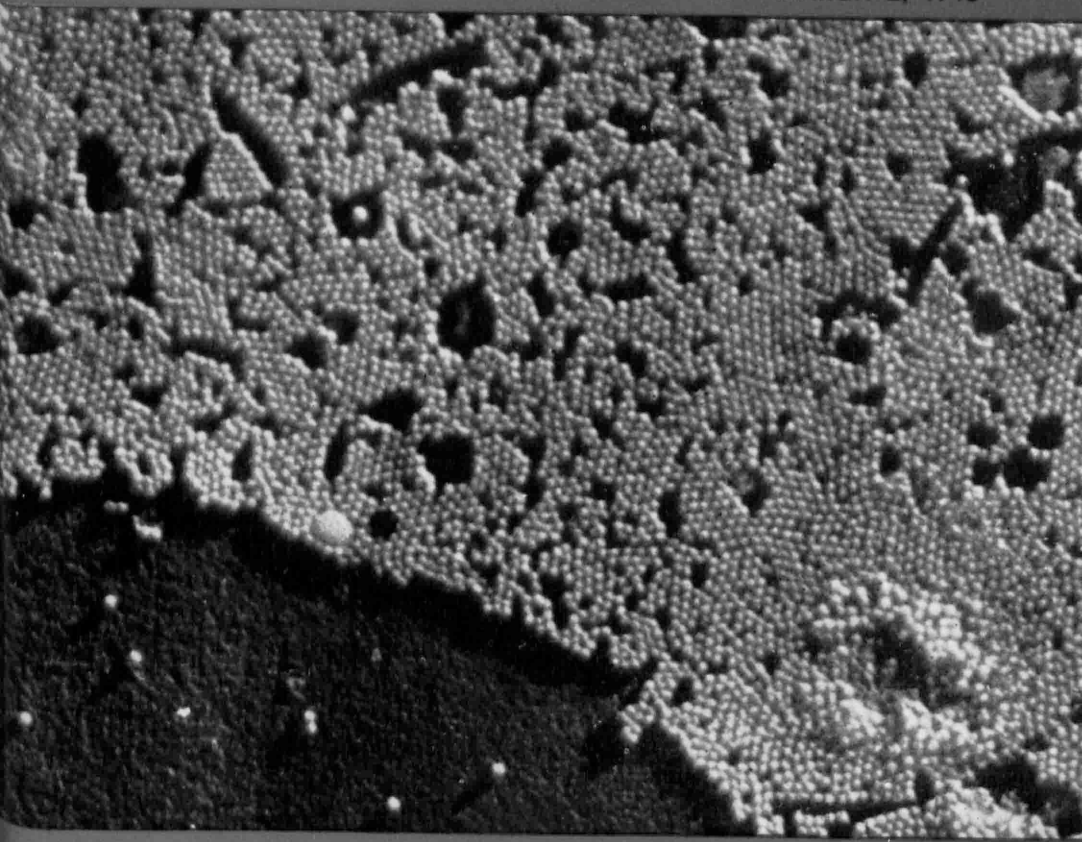


15¢

SCIENCE NEWS LETTER

Vol. 49, No.

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 2, 1946



Virus Molecules

See Page 137

A SCIENCE SERVICE PUBLICATION

PUBLIC HEALTH

Sleeping Sickness Danger

Conditions may make possible importation of disease from abroad. One virus has already moved with men from South America to Trinidad.

► WORLD CONDITIONS are probably ripe for transplanting in the United States deadly "sleeping sickness" viruses from the Orient, Africa and South America.

This is the warning of epidemiologists in the Hooper Foundation of the University of California Medical School, Dr. W. McD. Hammon and Dr. W. C. Reeves, who have been studying recent epidemics of encephalitis, or "sleeping sickness," in California and Washington.

Drs. Hammon and Reeves pointed out that the exotic viruses are closely related to those already flourishing in this country; that their experiments indicate at least one, the Japanese "B" type, which may be the most deadly, can be transmitted and propagated in the same manner as those now here; and that the mass movement of men over the world has already resulted in the transportation over water of one of the viruses from South America to Trinidad.

Severe epidemics of encephalitis in St. Louis in 1933, in the middle Northwest in 1941, and the smaller but uncontrolled outbreaks each year in several western states, notably Washington and California, are evidence that conditions are probably suitable for the existence of the exotic viruses in this country.

In studies of epidemics in Yakima Valley, Wash., and Kern County, Calif., Drs. Hammon and Reeves have shown that western equine, and probably St. Louis, encephalitis is transmitted to man by mosquitoes, which feed on fowl. The barnyard and wild fowl are the reservoirs of the disease.

Recent Hooper experiments show that the most deadly of the exotic viruses, the Japanese "B" type, can be transmitted also through mosquitoes. They have proved that six common species of California mosquitoes are able to transmit Japanese "B" type virus to animals.

Furthermore, by demonstrating the presence of the "B" type virus in the blood of inoculated chickens, they have indicated that the barnyard and probably wild fowl as well, would make suitable reservoirs for the virus.

"Once introduced into any of the hot valley areas where our own types of en-

cephalitis now propagate through a mosquito-fowl-mosquito cycle, there are good reasons to believe that the Japanese disease would be a greater plague than any we have at present," Drs. Hammon and Reeves say.

The scientists said that other types of encephalitis virus which could be transplanted to the U. S. are:

The Russian spring-summer encephalitis, which has been recognized as an epidemic type of human encephalitis for the past 40 years, occurring annually in forest regions of the eastern U.S.S.R. and to a lesser degree in European Russia. It is transmitted by ticks, and Drs. Hammon and Reeves say that the accidental transportation of one of these infected ticks might readily establish this disease in tick-infested forest areas of the U. S.

Venezuelan equine encephalomyelitis, which has been found in Venezuela, Colombia, Ecuador, and the virus was recently isolated from a fatally infected Navy seaman in Trinidad.

"Recent spread of the virus has probably occurred across water from Ecuador to Trinidad, and it is easy to conceive of its spread by ship or plane or by island hopping to our Gulf Coast where one mosquito vector is already present," the scientists note.

The West Nile encephalitis virus, which is related immunologically to the St. Louis-Japanese "B" group. This virus has been found in Uganda, Africa, and has been transmitted by mosquitoes in laboratory experiments.

Science News Letter, March 2, 1946

PHYSICS

Proximity Fuze Successful Where Older Types Failed

► AMERICA'S No. 2 secret weapon, the proximity fuze, brought direct hits on fast-moving enemy aircraft where the older time and contact types of fuze were unsuccessful, Dr. M. A. Tuve, chief physicist of the Department of Terrestrial Magnetism of the Carnegie Institution, Washington, D. C., and wartime director of one section of the proximity fuze development project, declared.

Dr. Tuve told of the work on the fuze as a guest of Watson Davis, director of Science Service, on "Adventures in Science" heard over the network of the Columbia Broadcasting System.

With aerial attack a constant threat to both Navy ships and Army ground troops, a new type of fuze was necessary for greater effectiveness against enemy planes, Dr. Tuve said. Time fuzes require many calculations involving the enemy's time of flight and distance to targets, he pointed out, while contact fuzes explode only upon scoring a direct hit.

The proximity fuze explodes the missile on coming near the target, and hence the name "proximity fuze," explained Dr. Tuve.

As an example of what the fuze meant to our Armed Forces, he cited the experience of one American anti-aircraft battery in the European Theater that had a record of only three planes probably shot down with thousands of rounds fired after D-Day. In the first three weeks after the proximity fuze was issued, this unit shot down 48 planes.

Originally developed to combat enemy aerial attack, the new fuze also found other valuable uses, the scientist reported. Proximity fuzes were used for strafing operations as an anti-personnel weapon on targets such as bridges that might have future value to our own operations.

Describing the fuze as a midget radio station installed on a projectile, Dr. Tuve discussed the problems of constructing this elaborate, small-scale unit that had to be able to operate after being fired from guns. Tiny tubes were developed that were rugged enough to withstand at least 20,000 times the force of gravity.

Dr. Tuve said the most ingenious development was the battery that supplied the power for the device.

"Many attempts culminated in the 'reserve' type of miniature battery which did not become activated until the spin of the shell broke a tiny ampule in the battery, thus releasing the electrolyte and causing the battery to operate when liquid was distributed through the plates while in flight," he explained.

Science News Letter, March 2, 1946

True *cinnamon* comes from Ceylon island and it is only there that the finest flavored cinnamon grows, it is claimed.

"Clay pigeons" used as flying targets on shooting ranges, are neither clay nor do they resemble birds; the circular disks are made of molten pitch mixed with pulverized limestone.

PUBLIC HEALTH

Typhoid in Europe

Postwar epidemic covers the greater part of central Europe. Only better living conditions with restoration of sanitation will check it.

► **TYPHOID FEVER** and diphtheria are ravaging most of Europe in a postwar epidemic wave that recalls the typhus fever epidemic in eastern Europe that followed the first World War.

Only improved living conditions with restoration of safe water supplies and sanitation will check the typhoid epidemic.

This disease is from 15 to 30 times more prevalent than before the war in an area covering the greater part of central Europe and consisting at least of the Netherlands, Germany, Austria, Czechoslovakia and Poland, Knud Stowman of UNRRA's Epidemic Control Section reports.

The epidemic area is believed to extend farther to the south and southeast, because it is likely that migration and unsettled conditions have raised the always very high typhoid fever incidence in Italy, Hungary and the greater part of the Balkans.

Typhoid fever cases usually decline in number during the winter. Reports for January of this year, latest received at UNRRA headquarters in Washington, D. C., however, tell of typhoid remaining unusually high for the winter months, though cases are not as many as during the peak in September and October.

Health authorities are hoping that sanitary conditions will have improved by June, when the usual seasonal rise in

typhoid fever starts.

War disruption and displacement of population groups are seen as the cause of the typhoid fever epidemic wave. The connection between the war and the diphtheria wave is not entirely clear, although abnormal living conditions doubtless play a part.

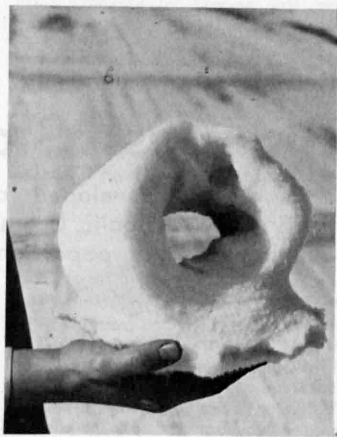
Protection against both these diseases is possible through a vaccination procedure. The populations of UNRRA camps for United Nations displaced persons have been or are being vaccinated. They do not contribute to the typhoid epidemic.

Vaccinating the two or three hundred million inhabitants of central Europe, however, is just impossible, particularly under present conditions. Dusting them with DDT to control typhus fever is far easier.

The germs of typhoid fever are not spread by body lice as are the typhus fever germs. Typhoid germs enter the body through the mouth and digestive tract, carried usually in water that has become contaminated. Milk and other food can carry the germs. Boiling temperature kills typhoid fever germs, but there is not enough fuel in Europe for most of the population to boil its drinking water.

Destruction of water supply systems has driven people to wells, streams, canals and the like for water and undoubtedly these are heavily contaminated.

Science News Letter, March 2, 1946



RARE SIGHT—The wind rolled snow balls, like the one in this photograph by H. B. Settle, in Saratoga County, N. Y., creating a rare scene. There were thousands of the snow balls, ranging in size from that of a golf ball to a wash-tub. The phenomenon is so rare as to be almost unheard of.

while he was at his regimental command post on a Normandy beachhead.

He was one of the only four in a group of 72 patients who did not survive. In two other cases the causes of death were also not high blood pressure. Of the four, three survived more than five years after the operation.

These 72 patients were among a group of 437 who had nerve-cutting operations for relief of high blood pressure five to 12 years ago. Slightly more than half, 251 or 57.5%, are living five to 11 years after the operation. Almost two-thirds, 64.8%, of the entire group was alive five years after the operation. In 82% the high blood pressure condition had progressed to serious organic disease before the operation.

Surgical treatment of high blood pressure, or the hypertensive state as the doctors call it, rarely results in a cure. They state, however, that no form of medical treatment has yet been shown to be as effective in "arresting the pernicious, progressive character of hypertensive disease, promoting improvement and increasing the life span."

Surgical treatment, Dr. Peet and Dr. Isberg believe, should be considered in

MEDICINE

Blood Pressure Surgery

Operation declared best treatment yet known for certain types of the disease. More than half living five to eleven years after the treatment.

► **A SUCCESS STORY** with a tragic ending appears in a report by Dr. Max M. Peet of the University of Michigan Medical School and Dr. Emil M. Isberg of Miami Beach, Fla. (*Journal, American Medical Association*, Feb. 23)

The story concerns a man operated on some years ago for relief of high blood

pressure. The operation was so successful that the man passed an Army final-type physical examination, was commissioned and went through two and one-half years of rigorous infantry training without having his blood pressure rise above normal. The tragic ending was his death by a German sniper's bullet

every case of essential hypertension though it should be used only when indicated. Evidence of progression and

activity of the disease, they state, constitutes indication for surgical treatment.

Science News Letter, March 2, 1946

loses weight, sexual function and is affected with mental and physical debility.

Treatment with extracts from the thyroid, anterior pituitary and adrenals has not been found satisfactory.

The first patient given testosterone in a tablet under the tongue was treated successfully in 1942 at the University of California. The doctors who have handled the two patients are Dr. Hans Lissner, Dr. L. E. Curtis and Dr. Robert F. Escamilla.

Science News Letter, March 2, 1946

A giant clamshell, although made of relatively thin materials, has great strength because it is arched and corrugated.

PHYSICS

Glareless Glass Available

Method developed for war use in optical instruments ready for public. Can now be used to prevent reflections from plastics, paper, photographs and oil paintings.

► METHODS for controlling the amount of light reflected from glass, developed during the war and used to improve military optical instruments and radar equipment, were revealed by the American Optical Company. Now applied to civilian uses, they make possible a glareless glass and a transparent mirror.

These methods may be applied to control light reflection not only from large areas of glass but also from plastics, paper, oil paintings and photographic prints. In their application no corrosive or dangerous acids are used, nor is any cumbersome, expensive equipment required. Former anti-reflection techniques were in general limited to glass and were practical for small pieces only.

Another feature of the new control methods is that they can be utilized to increase reflections as well as reduce them, scientists of the company state.

The new reflection-control techniques employ new chemicals, and the coatings are supplied by dipping, spinning, spraying or swabbing on the chemicals. Previously, they say, glare in glass was reduced by etching or leaching the surface of the glass with acids, or by evaporating magnesium fluoride or similar materials on the surface. This latter process involved the use of vacuum jars which necessarily limited the size of the glass that could be coated.

Three general types of reflection-reducing coatings have been developed for different uses, the American Optical Company states. They range from highly efficient compositions of moderate durability to efficient coatings of great durability.

To increase the amount of reflection from glass, its surface is covered with a single layer of high-reflecting coating, or multiple alternate layers of low-reflecting and high-reflecting coatings. Lovely pastel shades of different colors can be produced by the techniques, it is reported.

This high-reflecting glass can be used for windows that will reflect the hot

rays of the sun, and for one-way glass doors on ovens and refrigerators. In this latter use it is opaque until a light is switched on, after which it becomes transparent. It can be used also for structural and decorative mirrors.

When the reflection-reducing treatment is applied to lenses in binoculars a gain of over 60% in light transmission is claimed. Applied to camera lenses, the lens speed is increased and false images or "ghosts" are minimized.

Science News Letter, March 2, 1946

MEDICINE

Simmonds' Disease Treated By Hormone Under Tongue

► THE SUCCESSFUL treatment of a patient suffering from Simmonds' disease, restoring general health and lost sexual function, has been accomplished for a second time at the University of California Medical School by the administration of a sex hormone under the tongue.

Small, soluble tablets containing the hormone, testosterone, were placed under the 28-year-old male patient's tongue at intervals over a period of nine months, after other treatments had failed. He was restored to mental, physical and sexual vigor, and he married, gained weight and resumed an arduous occupation.

The patient had suffered from the disease, which had been brought on by severe injuries incurred in a motorcycle accident, for eight years.

There are few recorded cases of the successful treatment of true Simmonds' disease, which is rare and is brought on by more or less complete destruction of the pituitary gland, especially the anterior lobe.

This gland is an important body regulator, and its destruction results in the disorganization of the whole endocrine system of the body. The thyroid, adrenals, gonads, parathyroids and part of the pancreas are deranged, and the victim

SCIENCE NEWS LETTER

Vol. 49 MARCH 2, 1946 No. 9

The weekly summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. Washington, 6, D. C. NOLA 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

Copyright, 1946, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index. The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAtE 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research, Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology, Nominated by the National Research Council: C. G. Abbot, Smithsonian Institution; Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Board, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: Max B. Cook, Scripps Howard Newspapers; H. L. Smithson, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

Officers—President: Harlow Shapley. *Vice President and Chairman of Executive Committee:* C. G. Abbot. *Treasurer:* Frank R. Ford. *Secretary:* Watson Davis.

Staff—Director: Watson Davis. *Writers:* Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow. *Science Clubs of America:* Joseph H. Kross, Margaret E. Patterson. *Photography:* F. Brent Davis. *Sales and Advertising:* Hallie Jenkins. *Production:* Dorothy Reynolds.

ELECTRONICS

Revolution in Radio

"Printed wire" promises great changes in manufacturing techniques for the electronics industry. Matchbox-size radios will be novel.

► "PRINTED WIRE", the new development that reduces wiring radio circuits to a two-dimensional lithograph process, promises a revolution in manufacturing techniques for the radio and electronics industry.

Hailed as our wartime number two secret weapon, the proximity fuze used the printed circuits to reduce an intricately-wired radio mechanism to a size small enough to fit on the end of a bomb or mortar shell.

Developed by Globe-Union, Inc., Milwaukee, Wis., the new process uses a stencil placed on a ceramic plate to lithograph the wiring circuit. A "silver ink," a solution of fine silver or silver oxide, is painted on the plate by a roller going over the stencil. The hardened silver produces a silver wiring circuit instead of the usual copper wires.

Resistors are painted in over another stencil with a solution of carbon, and the radio circuit comes out robbed of its third dimension, with the complicated wiring simply a series of lines printed on the plate.

To build a radio, such as the now-possible matchbox-size one, thin condensers are attached and midget tubes are soldered to the circuit. Radio experts warn that these really midget radios will not be anything more than midget radios. A radio that you can conceal in the palm of your hand will produce high frequency sound that is less appealing to the ear than lower frequencies, and the volume and range of the receiver will be limited.

For the radio and electronics industry in general, startling developments are indicated. Midget tubes such as now are

being produced for hearing aids, and such as were used in the proximity fuze, can be fitted on printed wiring circuits for much more important instruments than the matchbox-size receiver.

Many war developments from radar and other electronic devices are not ready for postwar use because the size of much of the equipment is not practical for private and commercial application. Time and much ingenuity will be required to use printed circuits for the intricate wiring of many electronic instruments, and reducing the huge tubes to compact midgets will present many problems. Yet the achievements that produced the proximity fuze may find a place in cutting the size and cost of production of many war inventions.

One of the greatest savings in the new lithographing system is the speed of production. One person can turn out several thousand wiring circuits in a day, contrasted to the way radios are built today with hand wiring. Many errors are possible in hand wiring that create "rejects" at the end of a radio assembly line. With printed wiring, an accurate stencil removes much of the chance for a mistake that would send the radio back through the line for adjustment.

Once established, the new system will not only reduce labor costs to a fraction of their present amount, but will also cut the price of materials as the size of the unit is reduced.

Developed during the war to meet a specialized problem, the printing of wires is so simple that anyone is tempted to query, "Why wasn't it used before?" Actually the idea isn't a new one. Back in the "baling wire" days of amateur radio, some radio hobbyists used to connect circuits to a piece of paper and draw in a "carbon resistor" with their pencils, using the graphite "lead" of the pencil to vary the resistance. Today, circuits painted on steatite ceramic blocks promise a new era in radio and electronics production.

Science News Letter, March 2, 1946

ENGINEERING

Properties of Plastics To Be Studied

► WITH PLASTIC products now firmly entrenched as civilian construction materials, long-range research work to be undertaken at the Massachusetts Institute of Technology will produce information, it is expected, that will serve as a guide to the public in the proper appli-



LARGEST HELICOPTER—The PV-3, manufactured by the P-V Engineering Forum, Inc., is shown in flight over the company's Sharon Hill, Pa., plant. The machine is being readied for production as the latest Navy-Coast Guard air-sea rescue and special transport vehicle. It is the first transport type helicopter.

cations of these materials. The research, it is announced, will deal with the fundamental engineering problems of plastics, and will develop tests similar to those now available for other structural materials.

None of the research will be aimed at development of new materials, it is stated. Only plastics now in existence, or which will become commercially available, will be studied. Results will be published in scientific journals, with data made available for industrial labora-

tories of participating companies while the research is in progress.

The new research division, which will be in the Institute's department of building engineering and construction, is sponsored by the Plastics Materials Manufacturers Association, Inc., which is made up of leading producers of plastics. A steering committee representing the association has been set up. A representative of the American Society for Testing Materials will serve in an advisory capacity to the steering committee.

Science News Letter, March 2, 1946



BETTER BINDINGS—Book bindings which simulate the properties of leather yet cost as little as fabric bindings are possible by the use of synthetic resins. A coating of pyroxylin and Paraplex, developed by the Resinous Products & Chemical Co., remained flexible upon aging or exposure to low temperatures and wore well.

well-trained "robot" is given two different instructions, he is unable to make a choice.

He never fails to look for the date when he sees a newspaper, which otherwise does not interest him in the least, Dr. Martin Scheerer of the City College of New York, Eva Rothmann of the Boston Psychopathic Hospital, Harvard University, and Dr. Kurt Goldstein, Tufts College Medical School, report to the American Psychological Association.

In addition to his interest in dates, the boy has an unusual interest in sounds without regard to their meaning. He likes to play the piano for hours, but plays only by ear. He refuses to practice a piece of music, but his playing improves after he has listened to the composition several times.

On the basis of tests and specially devised experiments, the psychologists conclude that because the greater part of the boy's personality is so subnormal, the "idiot savant" has an extraordinary drive to exercise the few functions which are left to him, as his only claim to superiority. This boy seems to have particular talent in appreciation and use of sounds and apparently dates in his mind are somehow related to sound.

Science News Letter, March 2, 1946

Most fish cannot see in air.

ELECTRONICS

Radiotelephone for Taxis

Will enable drivers of public vehicles to make and receive calls to and from any subscriber in the general telephone system in the urban area.

► **RADIOTELEPHONE** equipment will soon be installed in taxis, buses and service trucks in St. Louis which will enable their drivers to make and receive telephone calls to and from any subscriber connected to the general telephone system in the urban area. The system will be known as the Urban Mobile Radiotelephone service, and is one of 30 installations in widely scattered cities, all to be in operation before next fall.

The Bell Telephone companies are making these extensive service trials, using Western Electric equipment for the installations in the vehicles. Similar frequency-modulated equipment is being designed, Western Electric announces, for coastal and harbor use on ships, and other applications are expected to include highway, railroad, airplane, police, fire and forestry service.

The mobile unit for installation in vehicles includes a radio receiver, a transmitter, antenna mounted above the car, and a control unit with an associated hand telephone. Electricity from the car battery furnishes the energy. Receiver and transmitter are mounted side by side in any convenient out-of-the-way place. The control unit and telephone handset are under the instrument panel within reach of the driver.

When the car is in use, a special switch is set so that the radiotelephone can be used or the driver called. To make a call the user picks up the handset in the usual way and gives the number wanted to the operator. When talking, a button on the handset is kept

depressed, but when listening it is released.

When anyone wants the car from a house phone, operator is called in the usual way and given the car's telephone number. The operator's signal rings a bell and at the same time lights a tiny lamp. The driver then lifts the handset and the conversation begins. If a driver is away from the car when wanted, the light remains on. When he returns the operator will tell him who called and complete the call if possible.

Science News Letter, March 2, 1946

PSYCHOLOGY

Abnormal 19-Year-Old Has Great Talent for Numbers

► A 19-YEAR-OLD boy of subnormal intelligence has been studied by psychologists for the past few years in the hopes of explaining his unusual talent for numbers. Upon learning the date of your birth, the boy can instantly tell you upon what day of the week it fell last year or five years ago. The next time he meets you, he will probably remark correctly that your birthday this year will come on Tuesday, a fact you may have forgotten.

The young man correctly spells many words forwards and backwards, yet is completely unaware of the meaning of most of them. He can faultlessly recite Lincoln's Gettysburg address, but is unable to tell any part of it in his own words. When he answers the telephone, he will take a message if told beforehand that a person will call. But when this

MEDICINE

Postpone Old Age

Could be delayed five to ten years longer by cutting down weight by diet regulation. Doctors ask public to apply present medical knowledge.

► OLD AGE could be postponed for five to ten years for a large part of the population by the application of present medical knowledge, says Dr. William J. Kerr, professor of medicine in the University of California Medical School.

Dr. Kerr says that the useful life span of persons incapacitated by some types of heart disease, such as hardening of the arteries, obesity, postural defects, and pulmonary emphysema, a destructive lung condition caused by labored breathing, could be lengthened, if medical science could secure public cooperation in the following:

1. Correction of postural defects
2. A physical fitness program
3. Application of present dietary knowledge

Dr. Kerr says these steps would maintain the circulatory system in good condition for a longer period and cut down the weight which causes an overload on the heart; nearly all the destruction of postural distortion and obesity would be eliminated.

As an example of what can be done under such a program, Dr. Kerr cited a group of obese patients treated at the University of California Medical School.

These patients were generally in their fifties or sixties, who for years had been gaining weight and losing stature. Their skin was discolored from poor circulation, the veins in their necks were distended and lungs showed irritation from heavy breathing, and poor posture had irritated the base of the spinal column.

A dietary regime was prescribed which reduced their weight to a level approaching their early adult life, and they were fitted with abdominal supporting belts, which Dr. Kerr helped to develop. Postural training was instituted.

The results were remarkable, says Dr. Kerr. More or less incapacitated at the beginning, most of the patients were able to resume a gainful occupation, and their general health improved greatly.

"We need not await the discovery by science of the causes of heart diseases, high blood pressure, arthritis and other clinical states which are closely associated with the degenerative diseases," says Dr. Kerr.

While it is encouraging to look forward to the days when scientific research may provide the definite answers on some if not all of these diseases, much can and should be done now, he added.

Science News Letter, March 2, 1946

ICHTHYOLOGY

Poisonous Fish Identified As Pacific Oil Fish

► A BIG OCEAN fish that looks like a barracuda, with flesh so poisonous that all 33 officers of a Navy mess who ate it were made desperately sick, has been identified by Dr. Leonard P. Schultz, curator of fishes on the Smithsonian Institution staff. He says it was a Pacific oil fish, so called because of the oiliness of its flesh? Its technical name is *Ruvettus pretiosus*.

The most striking symptom reported by the victims of the poisoning was an inability to drink cold water for five days. They stated that it burned their throats. Other symptoms were serious hindrance in talking, swallowing and breathing, and severe pains in the heart region. One officer was stricken blind for two hours.

The blood of the fish appears to contain most of the poison, which is readily soluble in water. For this reason, Japanese medical officers stated, their fellow-countrymen will sometimes take a chance and eat oil-fish flesh that has been thoroughly washed.

Science News Letter, March 2, 1946

ELECTRONICS

Anti-Collision Radar For Overnight Vessels

► THE FOGGY Chesapeake Bay will hold no terrors for the regular night boats of the Old Bay Line between Baltimore and Norfolk when radar equipment now being installed in the S.S. City of Richmond, and later in other vessels, is ready for use. The type of radar being installed will give protection in darkness, fog and other types of bad weather for from 100 yards to 32 miles.

The equipment recently underwent



NIGHT RADAR—This radar equipment will provide navigational assistance and anti-collision protection in darkness, fog and all other varieties of bad weather for from 100 yards to 32 miles. It will soon be installed in the Baltimore-Norfolk boat, City of Richmond.

preliminary tests, President R. E. Dunn of the Baltimore Steam Packet Company announced. The equipment is designed, constructed and installed by Westinghouse Electric Corporation. The Chesapeake is an excellent testing ground because of its heavy traffic, its irregular shorelines and its famous fogs.

The radar equipment now under installation has been developed from apparatus that proved its merits in war use. The officer on the bridge will have constantly before him a radar picture on the disk-like face of a seven-inch cathode tube. It will show water surfaces as dark, while any obstacles, such as ships, buoys and shorelines, will appear in a bright fluorescent pattern. Ships will be shown graphically, while shorelines will appear as on a map. Readings may be taken at three ranges—at radii of two, eight and 32 miles.

Science News Letter, March 2, 1946

Soybean milk is widely used in China as a breakfast drink and a baby food.

Birds have been roasted almost instantly when, by chance, they flew into the powerful beam of high-frequency waves at the mouth of a giant radar antenna used to jam enemy search equipment.

CHEMISTRY-ENTOMOLOGY

Insect-Killing Bombs To Be Plentiful

► VETERANS of the Pacific war who learned the effectiveness of the Army insect-killing bomb of the type known as aerosol, and other civilians, will probably be able to get a plentiful supply during the coming insect season because some 25 American companies are now making or planning to make them, according to *Industrial and Engineering Chemistry*, a publication of the American Chemical Society.

The civilian formula for the contents of the bomb will not vary greatly from the Army's, the journal states. This called for 3% DDT, 2% of a 20% pyrethrum concentrate, 5% cyclohexanone, 5% lubricating oil, and 85% Freon gas as carrier. The pressure in civilian aerosols may be lower than the 85 pounds hitherto used, and the screw valve on top of the bomb has already been replaced in some types with a more easily manipulated button on the container's side.

During the war there was considerable doubt as to the bomb's value to civilians because of its cost. However, the cost already has dropped from an introductory \$4 to under \$2.50, and is expected to fall below \$2, the article says. One manufacturer, it is reported, has developed a four-ounce refillable aerosol with the insecticide under pressure being sold to the consumer in a tin can which is sealed in the usual manner and inserted in the bomb's steel jacket. This may be the answer to cost.

Science News Letter, March 2, 1946

PHYSICS-MEDICINE

Krypton Gas Produced To Diagnose Diseases

► RADIOACTIVE krypton, a rare, inert gas produced in the atom-smashing cyclotron, has been developed for the diagnosis and study of vascular diseases such as hardening of the arteries, trench foot, and Buerger's disease.

The new medical tool was developed by University of California scientists working with peacetime tools of atomic research.

In "tracer" studies experimental animals were allowed to breathe radioactive krypton, while Geiger counters were placed on the extremities to record the arrival and uptake of the gas.

The rate of uptake was found to differ in impaired circulatory systems, and the degree of impairment could be de-

termined by measuring the uptake in the extremities in a given period of time.

A study of the effects of drugs such as adrenalin and histamine on the circulatory system was also made. The rate of uptake of krypton in the extremities varied according to whether the drug caused constriction or dilation of the blood vessels. It is expected that this technique will be valuable in further studies of the effects of drugs on the body.

Dr. S. F. Cook, professor of physiology, and Dr. W. N. Sears, of the University of California Medical School, conducted the experiments. The work was done in connection with a war research project in aviation medicine, headed by Dr. John H. Lawrence, who is in charge of the Radiation Laboratory's biological research.

Science News Letter, March 2, 1946

BIOCHEMISTRY

New Pigment Discovered In Human Red Hair

► JUST HOW red-headed a red-head is can now be told with scientific accuracy, thanks to a discovery by two University of Chicago scientists, Dr. Peter Flesch and Dr. Stephen Rothman.

They have found in human red hair an iron-containing pigment never known before. The redness of human hair, if it is not dyed, is proportional to the amount of this pigment in the hair, the scientists report. (*Journal of Investigative Dermatology*)

None of the pigment has been found in red hair from animals.

The new pigment does not of itself account for the color of human red hair, for removal does not change the color of the hair. Probably it modifies in some way the usual process of pigment production so that instead of the black melanin, which gives the color to black and brown hair, a red derivative of melanin is produced.

The pigment appears to be deposited in the central part of the hair as tiny granules which are normally invisible even under the microscope, but which can be demonstrated by a technique described by the authors.

The chemical structure of the new pigment is not known, but the authors' studies indicate that the empirical formula is probably $(C_{15}H_{20}N_2O_9)_2Fe$. They have perfected a simple method of extracting it.

The discovery of this pigment may have value in human heredity studies on the question of inheritance of red hair.

Science News Letter, March 2, 1946

IN SCIENCE

GENERAL SCIENCE

Five Committees Created For Intellectual Exchange

By VICTOR COFMAN

Science Service Correspondent

► MANY suggested activities of UNESCO, the United Nations Educational, Scientific and Cultural Organization, have been considered and referred to committees created at the recent fourth session of the preparatory commission held in London.

The structure of UNESCO, as at present envisaged, consists of five committees dealing with the following subjects: A—Humanities and Sciences; B—Education; C—Media of Mass Communication; D—Libraries, Museums, Exchanges, Publications, Special Projects; E—Organizational Issues.

Some of these committees are subdivided into sub-committees. For instance, Committee A, has sub-committees on philosophy, arts, social sciences and natural and pure sciences.

The sub-committee on natural and pure sciences would review and make recommendations upon the possibilities of international cooperation in the field of those sciences.

The sub-committee on social sciences would be responsible for planning activities, including the interchange of men and ideas, in those sciences, their application to contemporary international problems, the organization of international study conferences and institutes.

Committee B on education will deal with education at all levels, including adult education. It may be necessary for this committee to establish sub-committees, but it was felt that in order to emphasize the continuity of the educational process as much as possible of the planning should be done by the committee as a whole.

The preparatory commission is still awaiting the ratification, or at least the acceptance, of its charter by a sufficient number of governments, which would enable the secretariat to move to its permanent headquarters in Paris. Great Britain and Belgium have already ratified the charter, and the constitution of UNESCO, and the United States is expected to do so in the very near future.

Science News Letter, March 2, 1946

THE FIELDS

MICROSCOPY

Gold Shadows Make Possible Prediction of Virus Molecule

See Front Cover

► **THIN FILMS** of gold, deposited obliquely on a submicroscopic specimen, make it possible to obtain with the electron microscope a view of tiny objects otherwise beyond the range of even that instrument.

The lower limit for the electron microscope is determined by lack of contrast, rather than smallness of the object photographed. Biological specimens such as bacteria may be so thin that the electrons are widely scattered, causing lack of definition and a fogged appearance. An oblique deposit of metal, however, causes the higher elevations of the specimen to cast total or partial "shadows" on the sides or slopes away from the filament which contains the metal to be deposited. This gives a three-dimensional effect to the super-thin specimen, just as a low evening sun makes the mountains stand out in an airplane photograph of the landscape below.

The new technique, which made possible the beautiful photograph of the macromolecules of the bushy stunt virus shown on the front cover of this *SCIENCE NEWS LETTER*, is reported by Drs. Robley C. Williams and Ralph W. G. Wyckoff, of the University of Michigan, in the *Journal of Applied Physics*.

Science News Letter, March 2, 1946

MEDICINE

Beriberi in Orient Could Be Eradicated

► **BERIBERI**, which kills tens of thousands each year in the Orient, besides causing uncounted misery and disability, could be eradicated at a cost of not much more than 10 cents per person per year.

This cost figure is given by Dr. M. C. Kik, of the University of Arkansas, and Dr. Robert R. Williams, of the Bell Telephone Laboratories, in a report published by food and nutrition board of the National Research Council in Washington, D. C.

Beriberi, as most persons now know, results from a diet lacking in thiamin,

or vitamin B₁. When rice, staple food of most Oriental people, is milled and polished to a pretty gleaming white, it loses most of its thiamin. About half the population of the Orient lose what little thiamin is left in the polished white rice by cooking it in large amounts of water and throwing away this cooking water.

The most practical way of eradicating beriberi in the Orient, in the opinion of Dr. Kik and Dr. Williams, would be to enrich white rice, as our white flour has been enriched. The flavor and appearance would not be changed. Only 1% to 2% of the rice would have to be specially processed, an economic advantage. The necessary vitamins, the scientists point out, would probably have to be produced in at least the larger Asiatic countries to avoid unpopular drains on their foreign exchange.

Besides enriching the rice, people in those parts of the Orient who now cook rice in large amounts of water which is discarded would have to learn a better method of rice cooking. The preferred method is cooking in such a small amount of water that it is all absorbed by the rice. A double boiler helps avoid burning.

Science News Letter, March 2, 1946

ICHTHYOLOGY

Bramble Shark Sent to U. S. National Museum

► A **BRAMBLE SHARK**, one of the oddest fish in the world as well as one of the rarest, has just been added to the collections of the U. S. National Museum in Washington. It is the only specimen of its kind known to be in North America. Its six-foot-five-inch body is covered with short, sharp spines; whence its name.

Zoologists who examined it stated that it is certainly not a man-eater; on the contrary, its defensive armor suggests that it is a passive, probably sluggish creature, wanting only to be let alone. Its peculiar arrangement of fins, as well as the general flabbiness of its body, indicate that it is a weak swimmer, and probably a deep-water dweller.

The specimen was taken in a net by Capt. John DiMeglio, off the California coast near Los Angeles. He sent it to the California State Fisheries laboratory, which forwarded it to Washington. Previously taken specimens have been collected off the Atlantic coasts of Europe and Africa.

Science News Letter, March 2, 1946

AERONAUTICS

Turbo-Supercharger Raises Planes' Ceiling

► **THE NAVY CORSAIR**, fighter and bomber with a speed of over 400 miles an hour, can now operate efficiently at altitudes above 40,000 feet, thanks to a two-stage turbo-supercharger, the first ever developed, it is claimed. This raises the normal service ceiling of the plane by 10,000 feet. The supercharger differs from previous models in that the air coming into it passes through two stages of compression rather than one.

A complete squadron of Corsairs is now being equipped with the new superchargers, which are used in conjunction with the R-2800-C Pratt and Whitney engine. The supercharger was developed by the Turbo Engineering Corporation. In addition to its two-stage mixed flow compressor, it also incorporates internal air cooling. The mixed flow compressor is a combination of an axial flow and a centrifugal flow compressor.

Science News Letter, March 2, 1946

CHEMISTRY

Method for Unscrambling Pentolite Is Offered

► **UNSCRAMBLING** the world's toughest eggs is the interesting though touchy procedure which is the basis of a new U. S. patent, No. 2,394,223, issued to Joseph A. Wyler of Allentown, Pa., a chemist employed by the Trojan Powder Company. The "scrambled eggs" constitute the terrifically violent explosive mixture known generically as pentolite, used in bazooka projectiles, artillery shells and airplane bombs. It is a mixture of TNT and PETN, which spell out in full as trinitrotoluene and pentaerythritol tetranitrate. For some uses, ammonium nitrate and aluminum powder were also added.

The unscrambling process is based on the discovery that while PETN and TNT are both equally soluble in acetone there is a solubility differential between them in water. The first step therefore is to dissolve the explosive mixture in acetone, then add water very slowly, stirring all the while. After sufficient water has been added, the stirring is continued for half an hour or more. During this time the PETN settles out in crystalline form, and analysis shows it to be in a high state of purity.

Mr. Wyler has assigned his patent rights to his employing firm.

Science News Letter, March 2, 1946

MEDICINE

New Ally Against Disease

Found in the earth, streptomycin is effective against germs of typhoid, tuberculosis and tularemia. Production is difficult and amounts limited.

By JANE STAFFORD

➤ MOST PERSONS had hardly gotten over their delight that penicillin production had finally reached the stage where the precious mold chemical could be bought in the drugstore for ordinary civilians to use when word began going around about another potent substance like penicillin for aid in our war on disease.

Germs of tuberculosis, tularemia or rabbit fever and typhoid were among those which might, it seemed from first reports, be vanquished by this new germ-against-germ substance, technically termed an antibiotic.

Streptomycin is the name of this substance. Unlike penicillin, however, it was not discovered through a lucky accident, nor was there any favorable breeze to waft it to the attention of a scientist in his laboratory.

Streptomycin was found by five years of hard digging and searching. Digging is literally correct, since in the search for an antibiotic of its characteristics, microbes that live in the earth were examined as well as others that are found above ground.

Years of Searching

This down to earth searching for a weapon against disease germs was an idea of Dr. Selman A. Waksman. Dr. Waksman is microbiologist of the New Jersey State Agricultural Experiment Station. The earth's teeming microbes which convert waste into food for plant and animal life have long been the subject of Dr. Waksman's studies and in them, he thought, were to be found some microbial antagonisms which might prove useful in man's fight against germ-caused diseases.

As long ago as 1940 Dr. Waksman reported to the National Academy of Sciences some results of his earth-searching for new weapons against disease germs. This was only a few months after Dr. Rene J. Dubos, former student of Dr. Waksman's, had announced his discovery of gramicidin, a chemical from soil bacilli so powerful that one-millionth

of an ounce would protect a mouse from a lethal dose of pneumonia germs.

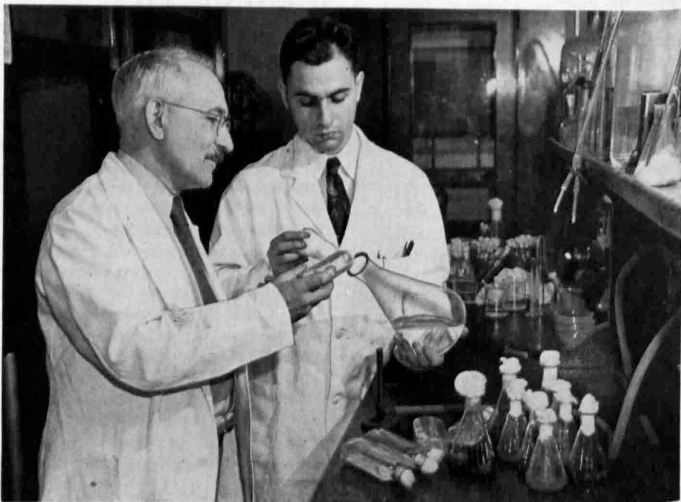
Neither gramicidin, however, nor the substance Dr. Waksman reported to the National Academy of Sciences turned out to be what the doctors needed to get people well of ailments like typhoid fever, dysenteries, rabbit fever, undulant fever, infection with the not-too-common *Klebsiella* which, when they get in the lungs, set up a stubborn pneumonia, not to mention that old enemy, tuberculosis.

The germs of these ailments were not susceptible to attack by the sulfa drugs which, in 1940, were constantly making headlines for their triumphs over streptococcus infections, pneumonia, and a number of other serious germ-caused diseases. Not even penicillin, when it was rescued from oblivion and turned to disease-fighting, could stop the onslaught

on human bodies of tubercle bacilli nor of disease germs belonging to the group labeled gram negative.

So Dr. Waksman, aided by numerous collaborators and students, continued his searching and digging for an antibiotic that would meet certain specifications. Safety for humans and power to stop the growth of gram-negative disease-producing germs were what the new antibiotic must have. In addition, it must be capable of exerting its antibiotic power in the presence of body fluids. If besides stopping the growth of disease germs, it could actually kill them, so much the better.

From normal soils, enriched soils, composts, manures and peat bogs, Dr. Waksman and fellow workers in his laboratory isolated bacteria, actinomycetes and fungi, and examined them for antibiotic production. Of the thousands of microbes studied, the actinomycetes showed most promise. These are neither molds nor bacteria, but occupy an intermediary position between the two. Like bacteria in many ways, they have



POTENT DRUG—Dr. Waksman and Dr. Albert Schatz, one of his assistants, are shown in the laboratories where the streptomycin-producing strain of *Streptomyces griseus* was discovered in 1943. Photograph by Fremont Davis, Science Service staff photographer.

thread-like, branching bodies like molds.

From one of these actinomycetes Dr. Waksman and his group turned up an antibiotic which they named actinomycin. This was in 1940.

"It was effective against many germs but it was also poisonous to the human body, so we had to put it aside," Dr. Waksman relates.

"Next we isolated from molds two compounds which we designated as clavacin and fumigacin. The first of these also proved to be quite toxic, while the second was not as active as we would have liked. Then came two more which we named chaetomin and micromonosporin. Chaetomin would attack germs in glass vessels but was not active in the human body. Micromonosporin had only limited activity even in the test tube.

Undaunted by Failure

"Finally we isolated a substance which we designated as streptothricin and which appeared to have the antibiotic properties that we were looking for. It would attack the gram-negative bacteria which penicillin and the sulfa drugs affected little or not at all. It was relatively harmless to the living body and at the same time effective against germs in the body as well as in laboratory vessels.

"Unfortunately, we discovered, upon careful investigation of the pharmacological properties of streptothricin, that it left a certain residual effect in the body which could in time become quite harmful."

Undaunted by this failure which had been so heartbreakingly close to being a success, Dr. Waksman and his collaborators searched further and finally discovered a culture of one kind of actinomycetes, *Streptomyces griseus*. From these greenish-yellow microbes they isolated the new, powerful antibiotic, streptomycin.

Only limited amounts of streptomycin have been available for tests of its activity as a remedy. Its production is about as difficult as is that of penicillin, and everyone remembers the struggle to obtain that precious stuff during the first months following knowledge of its potency. Penicillin production, moreover, enjoyed war priorities that were not available to streptomycin production.

Even with small quantities of streptomycin for testing, it has been given to a number of patients suffering from a variety of ailments. A quite recent report from the Mayo Clinic, one of the institutions where the antibiotic has been studied, states that it has been used

in the treatment of 108 patients since September, 1944. The results are summed up as follows:

"Although its value is not established in all of the following diseases, streptomycin appears at this time to be the antibiotic agent of greatest promise for treatment of typhoid fever, brucellosis, tularemia, sulfonamide and penicillin-resistant urinary tract infections, Klebsiella and Hemophilus infections, bacteremias due to some penicillin-resistant organisms, and tuberculosis.

"There is hope that it may eventually prove to be of value in bacillary dysentery, cholera and bubonic plague. It appears to have a place in treatment of some cases of bronchiectasis in combination with penicillin. Its effect upon intestinal flora of man when administered orally suggests important uses, including preparation of patients for surgery on the intestinal tract."

In the 54 cases of tuberculosis, streptomycin seemed to suppress the activity of the TB germs in the patient's body so long as it was given, but it did not show any signs of a rapid killing action on

the germs, as it had in the test tube. Everyone of the 21 patients with tuberculosis of the lungs had a poor prognosis and appeared to have less than standard resistance to the disease.

In no case did the disease extend to unaffected lung tissue while streptomycin treatment was being given, and in at least 16 cases, signs of improvement appeared within four to eight weeks after treatment was started. The rate of improvement, however, was often not much faster than in patients with good resistance who did not get streptomycin.

The very nature of tuberculosis makes it difficult to determine without considerable time and study the value of any drug. Streptomycin seems promising enough for continued study, but patients and their relatives are reminded that the effectiveness of sanatorium care and collapse therapy are known and that these methods of treatment should not be abandoned while larger supplies of streptomycin and more knowledge about its action in tuberculosis are being built up.

Science News Letter, March 2, 1946

ENGINEERING

Off-Street Parking

Is advocated as a step to solve city traffic congestion. Sites acquired by condemnation proceedings in 15 states.

► OFF-STREET parking centers in cities where sufficient privately-owned space is not provided were advocated by F. W. Lovejoy of the U. S. Public Roads Administration at the meeting of the American Society of Civil Engineers in a special session devoted to traffic congestion problems.

Fifteen states, he said, now have laws authorizing the use of condemnation proceedings to acquire sites if necessary.

Traffic congestion in American cities was branded as a malady menacing the cores of the cities and threatening the whole urban organism with irreparable economic losses through decentralization of business and industry.

"Traffic congestion is costly," declared Leslie Williams of the American Transit Association. "It has been estimated that its economic loss equals that incurred by traffic accidents which, according to the National Safety Council, approached \$2,000,000,000 in 1941."

Robert A. Mitchell, chief of the Phila-

delphia bureau of traffic engineering, presented the results of a curb parking and shopping survey recently made in the central business district of that city. Only slightly more than 3% of the persons entering the district during shopping hours, he said, came in cars parked at the curb, legally or illegally.

The great mass of business in the area, he continued, is done by persons using mass transportation and, therefore, merchants and business interests should support measures to free the streets, where necessary, for the better movement of vehicles, and oppose the use of street space for parking.

Science News Letter, March 2, 1946

Soybean milk, now being produced by several companies in the United States, has high nutritional value.

A dark red veterinary *petrolatum* was the safest, most practicable, most cohesive and nontoxic agent found to protect soldiers from excessive sunburn.

Do You Know?

Electric power now actuates 90% of the accessories in modern aircraft.

"Nails" used in bone surgery are made of tantalum.

Lard keeps better if rendered soon after the hog is butchered.

Mace, a well-known spice, is made from the fibrous covering of the nutmeg.

An avalanche which, in 1943, almost destroyed Chavin, north of Lima, Peru, was one of the worst of the century; approximately 1,000 lives were lost.

Pheasants will mate, but rarely, with Guinea fowl or the common chicken; the offspring of a pheasant cock and a chicken is called a Pero.

"Aged cheese" of excellent flavor and quality is now produced in three to four months by American cheese factories, half the time formerly required.

Nickel ore will soon be mined again in the Petsamo district north of the Arctic Circle in what was, prior to the war, part of Finland but is now Russian; former mining facilities were destroyed by the Germans.

PHYSICS

Peacetime Atomic Energy

Is a new and difficult project and will be satisfactory only after intensive research and solution of many difficult engineering problems.

► ATOMIC ENERGY has possible peacetime applications but only after intensive laboratory research in nuclear and related fields and the solution of many difficult engineering problems, Dr. C. G. Suits, vice-president and research director of General Electric, told the American Institute of Electrical Engineers in New York.

"We have, during the war, largely used up our accumulated surplus of basic knowledge of the nucleus," he said. "The dividend was the atomic bomb. We must, without further delay, restore this surplus in preparation for the important peacetime job for the nucleus—power production."

"The development of economical atomic power is not a simple extrapolation of knowledge gained during the bomb work," he continued. "It is a new and difficult project and great effort will be required to reach a satisfactory answer. Needless to say, it is vital that atomic policy legislation now being considered by the Congress recognizes the essential nature of this peacetime job, and that it not only permits but encourages the cooperative research-engineering effort of industrial, government and university laboratories for this task."

In mentioning some prospective uses of atomic or nuclear energy, certain difficulties of production and installation rule out a host of low-power applications, he said.

"Automotive power is out," he asserted. "Railroad locomotive power is almost certainly out. Large ship propulsion seems not only possible, but attractive, but on a strategic rather than on a competitive basis. An advantage gained in the space required for fuel is partly offset by the space required for shielding; evidently a detailed research and engineering study will be required to evaluate this application.

"Perhaps large electric power plants are in the running in areas, for example, Australia, where there is practically no conventional fuel but abundant natural resources of many other types," he continued. "Atomic power plants for electric power generation will probably at some distant future time compete suc-

cessfully with coal, oil and water power energized plants."

"But it should be borne in mind," he added, "that there is nothing in the present status of nuclear research to justify the hope of direct conversion of nuclear to electrical energy."

Before presenting these possible applications of atomic energy, Dr. Suits reviewed certain new physical facts. That energy may be produced by the disintegration of the nucleus is not one of the new facts, he stated. That has been known since the discovery of natural radioactivity 50 years ago. Radium is too rare and too expensive to be a factor in the power field.

"The discovery of a new type of nuclear disintegration called fission, in 1939, is a new fact," Dr. Suits declared. "Fission occurs in uranium, thorium, and some other elements. Relative to radium, uranium is an abundant element. It comes by the pound and costs a few dollars per pound."

"Only the isotope U235 undergoes fission and it is present as less than 1% of natural uranium," he continued. "However, under the most favorable circumstances the bulk of natural uranium, suitably purified, is converted to fissionable elements, so that nearly all of it may be used to create nuclear energy."

The fission of one pound of U235 produces 10,000 kilowatt-hours, he added.

"Uranium in a pure condition, or enriched in the isotope U235, may be used in a chain reacting pile to produce controllable heat energy," Dr. Suits explained. "This nuclear reaction in a pile goes at any temperature permitted by the materials of construction. These materials include the fissionable elements, the moderators, or slower-downers, the heat transfer medium, the various mechanical parts required for control, and finally the radiation shield."

Dr. Suits called attention to some of the difficulties in the process due to mechanical feeding, the accumulation of reaction products including toxic gases, and especially the neutron radiation from which workers must be protected.

Science News Letter, March 2, 1946



LANGUAGE IS POWER

... Forge ahead, win special assignments, promotion, better job in global peace time opportunities through ability to speak a foreign language.

MASTER A NEW LANGUAGE quickly, easily, correctly by LINGUAPHONE

The world-famous Linguaphone Conversational Method brings voices of native teachers INTO YOUR OWN HOME. You learn the new language by LISTENING. It's amazingly simple; thousands have succeeded.

HOME-STUDY COURSES IN 29 LANGUAGES

Send for FREE book—

LINGUAPHONE INSTITUTE
31 RCA Bldg., New York 20 • Circle 7-0830

LINGUAPHONE INSTITUTE,
31 RCA Bldg., New York 20, N. Y.
Send me the FREE Linguaphone Book.

Name.....

Address..... City.....

Language Interested.....

Announcement to Teachers

"After reading Science News Letter thoroughly, I feel still more certain than before that your publication is the *only practical means* for a high school boy to keep up with the sciences." DONALD ROSS, Student at Cranbrook School, Bloomfield Hills, Michigan.

"You have a splendid publication and I wish that it could be in *every* library and in *every* reading room." P. B. HILL, 106 East Goodwin St., Victoria, Texas.

"Science News Letter is discussed very thoroughly in our classrooms. We are happy to be able to get such information. Each student looks forward to Friday classes which are devoted to Science News Letter. We are thankful to get up to date developments in the various fields of science." M. C. SMITH, Oxford, Florida.

"This is to let you know that I have been receiving the Science News Letter and it has proven to be a *helpful source* for information in the guiding of my students into the proper channels for current news on scientific problems." GEO. B. HOLLINSWORTH, 508 S. Randall St., East Point, Georgia.

"Science News Letter came to my husband, Dr. W. W. Hickman, in Assuit, Egypt (Assuit College) for many, many years. It was *avidly devoured* by many—not only American and Egyptian staff members but also by aspiring students." Mrs. ALICE E. HICKMAN, 1125 East Detroit Avenue, Monmouth, Illinois.

"We have been reading Science News Letter for one year now, and we like it better than any other publication of this kind we have seen. The *whole family* enjoys the short easy-to-understand articles on science which affect the everyday lives of people." W. P. SELLERS, P. O. Box 216, Washington, Louisiana.

"The fact that I am unwilling to miss a single issue of Science News Letter should be adequate evidence of the esteem in which I hold it." JAMES T. LAING, Head, Dept. of Sociology, Kent State University, Kent, Ohio.

"I think Science News Letter carries the best news I've seen—so does the C. P. Club." SISTER M. COLETTE, St. Benaventure High School, 1806 15th Street, Columbus, Nebraska.

"Very *instructive* magazine. I could not do without it in my teaching." MISS NORMA KOCH, R. R. #4, Box 476, Indianapolis, Indiana.

"I can truthfully say that Science News Letter and Chemistry are invaluable *aids* in my chemistry classes." Mrs. MARY E. VOORHEES, Belt, Montana.

—YOUR STUDENTS WILL BENEFIT AND SO WILL YOU . . .

SCIENCE SERVICE again offers its Science News Letter BUNDLE MAILING, discontinued during the war.

You can now obtain 10 or more copies of Science News Letter each week, *for use by students* at home or in class, at ONE HALF the single copy price when all the copies come addressed to you and in one bundle.

Note some of the comments at the left. They explain why Science News Letter is popular with students. It brings to them the excitement of change and new developments, and thus makes learning easy (which reduces your teaching load).

For 7½¢ a copy, every science student you teach can have his own Science News Letter each week. Collect 33¢ a month from each and you will come out right.

Order your needs on the coupon below. Start your BUNDLE subscription now, and stop it whenever you like. Most teachers continue right up to examination time, and start again in the Fall.

BUNDLE SERVICE ORDER BLANK

SCIENCE SERVICE (10 or more copies)
1719 N Street, N. W.
Washington 6, D. C.

Please send me copies of Science News Letter in one bundle each week until (date), and send bill at 7½¢ per copy as instructed below.

Address weekly BUNDLE to:

Name _____

School _____

Street Address _____

City, Zone, State _____

Send BILL IN TRIPLICATE TO:

Name _____

School _____

Street Address _____

City, Zone, State _____



Untamable Cattle

► WHEN THE FIRST human migrants came into this continent by way of Alaska they brought with them only one domestic animal, the dog. They were hunting tribes, and had no use for other animals except to kill and eat them. Indeed, it now seems probable that these first comers made their memorable trip at so early a date—perhaps as much as 20,000 years ago—that no one anywhere on earth had learned how to tame any animal other than the dog.

But whereas Old-World peoples domesticated horses, cattle, sheep, goats, camels, elephants, reindeer, chickens, ducks, geese, pigeons and a whole Noah's Ark of other beasts and birds, the natives of the Americas had almost

nothing in the way of tamed work or food animals. In the Andes they had two representatives of the camel family, the llama and the alpaca. In Middle America they had the turkey. Elsewhere Indians had domesticated the mallard duck and the cavy or guinea-pig. And that is about the whole list.

Lack of ability on the part of the Indians cannot be argued as a reason for this small showing. They developed several civilizations that reached a level comparable with that of the ancient Egyptians and Babylonians. They had considerable skill as astronomers and mathematicians. They had done notably well in domesticating native plants, with corn, potatoes, tobacco, peanuts, vanilla, red peppers and a long list of others to their credit. They took to European domestic animals readily enough when the white man introduced them—too readily, in the case of some of the white man's horses. Their failure to tame any animals must be sought elsewhere than in lack of talent or patience for the job.

It seems not at all unlikely that the Indians tamed so few animals because most of the animals on this continent just wouldn't be tamed. The bison, only American member of the ox tribe, is at once one of the biggest, one of the stupidest and one of the most truculent of all cattle. The pronghorn, nearest

thing we have to an antelope, is just as untamable as its Asiatic and African "opposite numbers." Although horses had originated and evolved on this continent, they had become extinct here and the Indians saw their first horses when Spanish cavalry made its terrifying appearance. Deer and elk are alike untamable in Old World and New. The Indian just played in hard luck, so far as animals were concerned.

An interesting case is that of the Asiatic reindeer and its near relative, the North American caribou. Reindeer are rather unruly, but they have been successfully domesticated. But the caribou is unrulier still, and is enough bigger than reindeer to make him impossible to "wrangle." So the only way you can use him is to shoot him.

Science News Letter, March 2, 1946

When a cataract is removed from an eye, vision is usually very poor unless a spectacle lens of proper strength is used to replace the cataractous lens; a glass lens placed just outside the eyeball is often used.

Oranges and grapefruit may soon be on the market with all their first-picked freshness; they will be enclosed in a tight wrapping of Pliofilm, a transparent film made by reacting natural rubber with hydrogen chloride.

Clip and mail this Coupon

To SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C.

- Start my subscription to SCIENCE NEWS LETTER for 1 year, \$5
 Renew 2 years, \$8
 (No extra postage to anywhere in the world)

To CHEMISTRY, 1719 N St., N.W., Washington 6, D. C.

- Start my subscription to CHEMISTRY for 1 year, \$2.50
 Renew 2 years, \$4.00

To THINGS of SCIENCE, 1719 N St., N.W., Washington 6, D. C.

- Enter my membership in THINGS for 6 months, \$2
 Renew 1 year, \$4

To SCIENCE CLUBS OF AMERICA, 1719 N St., N.W., Washington 6, D. C.

- Send me information on organizing a science club.
 Enroll me as an associate of Science Clubs of America, 25 cents is enclosed.

Name _____

Street _____

Address _____

City and _____

State _____

YOUR HAIR and Its Care

By Oscar L. Levin, M.D.
and Howard T. Behrman, M.D.

NEW, REVISED, EXPANDED EDITION—JUST OUT!
If you want healthy hair, lovely hair, then you need the expert advice in this book.

Two medical specialists have here pooled their knowledge to give you in plain language the up-to-date scientific facts now available about hair. They tell you what to do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, common and uncommon, as:

Dandruff—gray hair—thinning hair—care of the scalp—baldness—abnormal types of hair—excessive oiliness—brittle dryness—hair falling out—infection—parasites—hair hygiene, etc., etc.

Medical science is better equipped today than ever before to prevent trouble about the hair line; or, should some difficulty already have arisen, to deal effectively with it.

"A worthwhile book full of important information."
—Ohio State Medical Journal.

Price \$2.00, incl. postage. 5-day-Money-Back Guarantee
EMERSON BOOKS, Inc., Dept. 563-C, 251 W. 19th Street, New York 11

Books of the Week

atoes from the "gassed" area had to be destroyed as unfit for use.

No deformity or abnormal growth by the plants was noticed, although the product of the factory is a chemical that in mild doses stimulates growth and in heavier concentration is fatal to plants.

The phenolic vapors seem to have been the only ones having effect on vegetable flavors. Samples from gardens near other factories, giving off other kinds of odorous vapors, tasted all right.

Science News Letter, March 2, 1946

PROPAGANDA, COMMUNICATION, AND PUBLIC OPINION: A Comprehensive Reference Guide—Bruce Lannes Smith, Harold D. Lasswell, and Ralph D. Casey—*Princeton Univ. Press*, 435 p., tables, \$5. A bibliography of the most representative titles by scholars, political leaders, advertisers, public relations counsel.

THE BEST OF SCIENCE FICTION—Groff Conklin—*Crown*, 785 p., \$3. Forty stories by Lewis Padgett, Robert Heinlein, Anson MacDonald, Murray Leinster, Don A. Stuart.

PREVENTIVE MEDICINE AND PUBLIC HEALTH—Wilson G. Smillie, M.D.—*Macmillan*, 607 p., tables and diagrs., \$6. A discussion of the thesis that preventive medicine is an essential part of the practice of clinical medicine, with the primary emphasis on the importance of the practising physician in the promotion of individual family and community health.

WHILE YOU WERE GONE: A Report on Wartime Life in the United States—Jack Goodman, Ed.—*Simon and Schuster*, 625 p., \$3.50. A colorful history of important years by outstanding authorities covering virtually every major phase of American activity.

MODERN TRENDS IN CHILD PSYCHIATRY—Nolan D. C. Lewis, M.D. and Bernard L. Pacella, M.D., editors—*Int. Univ. Press*, 341 p., \$6. A collection of lectures given recently by leading authorities at the New York State Psychiatric Hospital and Institute.

A NATION OF NATIONS—Louis Adamic—*Harper* 399 p., illus., \$3.50. Challenging the idea that the U. S. is exclusively an "Anglo-Saxon" country, the author examines our heritage from Britons, Irishmen, Frenchmen, Scandinavians, Slavs, Latins, Negroes—and Protestants, Catholics, and Jews.

THE PECKHAM EXPERIMENT: A Study of the

Living Structure of Society—Innes H. Pearse and Lucy H. Crocker—*Yale University Press*, 333p., illus., \$3.50. The story of a community center in the Peckham district of London, founded to explore ways of increasing the health and satisfaction in living of the local family.

POLITICAL RECONSTRUCTION—Karl Loewenstein—*Macmillan*, 498 p., \$4. A discussion of the types of government offering the best guarantee of peace, and the responsibility of the United Nations for seeing that the sovereign states of the world establish and maintain such types of government.

INCLUSIVE AND UNIFORM ALPHABET FOR RUSSIAN, BULGARIAN, SERB-CROATIAN, CZECH, POLISH—Maro Beath Jones—*Perkins*, 35 p., tables, \$1. A study with a two-fold purpose: to offer a solution to the chaotic problem of transliteration from Russian into Latin characters; and to evolve a system of orthography that will be constant for Russian and the other four dominant Slavic tongues.

SOCIAL EDUCATION FOR YOUNG CHILDREN: In the Kindergarten and Primary Grades—Mary Willcockson, Ed., and Ernest Horn, Consultant—*National Council for the Social Studies* 119 p., tables, \$1.

PLASTICS MOLD ENGINEERING—J. H. DuBois and W. I. Pribble—*American Technical Society*, 494 p., tables and illus., \$7. The fundamentals of plastics mold design and construction.

WHY SMASH ATOMS?—Arthur K. Solomon—*Harvard Univ. Press*, 204 p., illus., \$3. rev. ed. The story of atomic research during the last fifty years, and of its culmination in the release of unimaginable force by the atomic bomb. This revised edition includes important data released by the Government on the atomic bomb.

Science News Letter, March 2, 1946

A Scientist's Experiences in Medical Research

THE WAY OF AN INVESTIGATOR

by

Walter B. Cannon, M.D.

George Higginson Professor of Physiology, Emeritus, Harvard University Medical School

"It is a truly great book . . . Among American men of science, few have contributed so much . . . All who have known him will treasure this volume as though it were an intimate letter from a very dear friend. All who have not had that privilege will discover . . . that they too are within the charmed circle . . ."—*American Scientist*.

At all bookstores
\$3.00

W. W. NORTON & CO.
70 Fifth Avenue, New York 11

PLANT PHYSIOLOGY

Vegetables Spoiled

Phenolic, or "carbolic acid", vapors from factory absorbed by growing plants, to appear as off flavor and ruin edibility.

▶ **VEGETABLES** in gardens near a factory at Ambler, Pa., making the new weed-killing chemical known as 2-4-D were given unpalatable flavor and made inedible, last summer, by phenolic, or "carbolic acid", vapors drifting down the wind, reports E. G. Beinhart, research worker at the U. S. Department of Agriculture's Eastern Regional Research Laboratory (*Science*, Feb. 15).

The odor of this chemical was noticeable as much as two miles from the factory, Mr. Beinhart states, and was stronger on damp days than in clear

weather. The vapors did no apparent harm to human beings, even to workers in the factory, where they were most concentrated.

Garden vegetables, however, absorbed them and stored them in their tissues, producing distinctly disagreeable odor and taste effects. Among the vegetables affected were tomatoes, string beans, Swiss chard and lettuce. Tomatoes were especially badly tainted; a common complaint was that they "tasted like medicine." Cooking them only made things worse. Quantities of canned to-

New Machines and Gadgets.

❁ **HOME FIRE-ALARM** system gives warning of fire in garage, basement and attic before the fire has gained headway. Automatic sentinels, installed in ceilings, are sensitive temperature thermostats electrically connected with the alarm. Normally each completes a circuit at 150 degrees Fahrenheit.

Science News Letter, March 2, 1946

❁ **BEVERAGE** container for drinking without danger of spilling, just patented, is the familiar paper box in which drinks are sold, but has fixed within it two drinking tubes, one inside the other. When the container's lid is lifted, the inner tube is drawn outward by means of a string attached to a cork that closes its upper end.

Science News Letter, March 2, 1946

❁ **GOLF TEE**, recently patented, is the familiar wooden peg with concave top to hold the ball, but its lower point is covered with a marking material so that the tee may be used as a pencil to record scores. The marking substance is graphite with a binder.

Science News Letter, March 2, 1946

❁ **RECEIVER** for portable radio operates on alternating or direct current, or on a built-in battery, and can be used for standard broadcast or certain short-wave bands. A unique feature is the pop-up wave rod, shown in the picture, which is released by touching a button.



It telescopes into the cabinet when not in use.

Science News Letter, March 2, 1946

❁ **TROUSER HANGER**, recently patented, differs from other hangers in having upward projecting broad parts on its two jaws to insert under the cuffs of the trousers. The spring-wire handle holds the jaws together and the pants legs in place, but suspension is by the parts under the cuffs.

Science News Letter, March 2, 1946

❁ **HAIR RETAINER**, an ornament to hold the hair in place, is a simple concave plastic disk with spokes spirally arranged on its outer edge and bent downward so that they can be inserted into the hair. An open space is provided near the roots of the spokes to accommodate the hair.

Science News Letter, March 2, 1946

❁ **ICE AUGER**, to cut fishing holes through thick ice, is rotated with a handle similar to that of a carpenter's bit, and has two cutting blades with saw-tooth edges that make a wide concave bottom surface as they cut. Semi-circular extensions on the backs of the blades form a pan for the shavings.

Science News Letter, March 2, 1946

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 300.

Question Box

BIOCHEMISTRY

How can you tell how red a red head is? p. 136.

ELECTRONICS

What is "printed wire"? p. 133.
What vessels will soon be equipped with anti-collision radar? p. 135.

GENERAL SCIENCE

What are the five committees of UNESCO? p. 136.

ICHTHYOLOGY

What rare fish was recently sent to the U. S. National Museum in Washington? p. 137.

MEDICINE

How can old age best be postponed? p. 135.
What diseases is streptomycin especially effective against? p. 138.

What treatment brought recovery from Simmonds' disease? p. 132.

What treatment has been found best for certain types of high blood pressure? p. 131.

MICROSCOPY

How can the electron microscope now photograph objects formerly beyond its range? p. 137.

NUTRITION

What effect did "carbolic acid" vapors have on vegetables growing nearby? p. 143.

PHYSICS

How has glareless glass been produced? p. 132.

PUBLIC HEALTH

How great is the danger of sleeping sickness being spread to the United States? p. 130.
What two dread diseases are ravaging Europe? p. 131.

Where published sources are used they are cited.

Change-of-Address Coupon

PLEASE PRINT
New Address.....

In requesting change of address please give NEW address on lines below and mail this entire coupon (including imprint of old address at right) to Science News Letter, 1719 N. St., N. W., Washington 6, D. C. Do this at least 30 days before you move. This coupon will come effective. Date on lower line of imprint at right is date your subscription expires. Please renew early to avoid missing any copies.

Include postal unit number, if any