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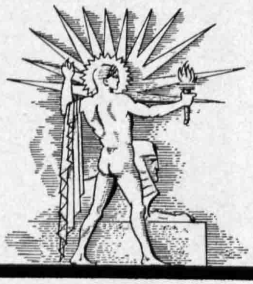
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



January 24, 1942

For FM

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A SCIENCE SERVICE PUBLICATION

Do You Know?

Eleven hundred feet under the city of Detroit is a 160-acre *salt mine.*

Fish never drink water—they rely on their food for moisture.

Chicago and Pittsburgh are unusually good markets for *rattlesnake* meat.

Temperatures as high as 134 degrees F. have been recorded in *Death Valley.*

Greeks used water trickling through a tiny hole in a reservoir to measure *time.*

The Army's new pot-shaped *helmet* was developed after studies of football helmets.

Because of its rapid digestion, the *shrew* can only sleep for short intervals between meals.

Army Quartermasters find the best *shoe soles* last a soldier only ten days on long daily marches.

Vegetarians, farm workers, miners, and some industrial workers are eligible in Britain for a special *cheese* ration of 12 ounces per week.

The *poinsettia* is named for Dr. Joel Poinsett, who brought the plant to the United States from Mexico in the early nineteenth century.

Dr. Alexis Carrel's famous chicken *heart* has reached its 30th year of independent life in its wholly artificial environment of laboratory glassware.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

AERONAUTICS

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NUTRITION

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PHYSICS

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PUBLIC HEALTH

How prevalent is typhoid? p. 56.

How was a Philadelphia measles epidemic halted? p. 52.

Goat's milk is often palatable to persons allergic to cow's milk.

Thread-finned fish of the Amazon River, leap from the water to lay their eggs on overhanging plants.

Landscape architects, once concerned with building showplace-estates, now are Army *camoflеurs,* helping conceal military objectives.

U. S. war effort is booming the second-hand *camera* market—a well-cared-for camera of high quality may be worth more now than when it was new.

If ordinary grease were used to lubricate *submarine fins,* an oil trail would be left on the water for enemies, but grease that leaves no "slick" is available.

An *oyster* may change its sex from year to year.

Animals are generally immune to *poison ivy;* some species eat it freely.

A *tank destroyer* designed for the Army is a tractor-like machine which carries a 75-mm. cannon at 75-mile-an-hour speed.

In their wars of conquest, the *Incas* of Peru tried to avoid wrecking areas because they looked upon the enemy as future subjects of their state.

African *hartebeests,* a species of antelope, would make perfect air raid wardens—they often risk their own lives to warn other animals of approaching danger.

SCIENCE NEWS LETTER

Vol. 41 JANUARY 24, 1942 *No. 4*

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington, D. C. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

Cable address: Scienserve, Washington.

Entered as second class matter at the postoffice 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 in the Engineering Index.

The Science Observer, established by the American Institute of the City of New York, is now included in the SCIENCE NEWS LETTER.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Advertising rates on application. Member Audit Bureau of Circulation.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation.

AERONAUTICS

America To Have Fastest Fighting Airplanes in World

National Advisory Committee for Aeronautics Report Outlines Research Problems Directed To This End

AIRPLANES that can dart through the skies at over 400 miles an hour and climb to unexplored heights in the stratosphere are promised as part of America's new aircraft program in a report of the National Advisory Committee for Aeronautics just submitted to Congress by President Roosevelt.

In effect a blueprint for giving the United States the fastest and highest flying airplanes in the world and—after the war—the best commercial aviation, the report outlines some of the research problems involved in such a program.

Germany's Messerschmitt has a speed of 360 miles an hour. So a speed of 400 miles an hour and "as much more as is practicable" was accepted as an obvious necessity for the American program.

This posed some nice technical problems for scientists of the NACA.

"The factors involved include not only clean aerodynamic design," the Committee's report states, "but the discovery of new principles and facts whose application in design leads to real improvements. It is not enough merely to increase the horsepower and to smooth the surfaces.

"It was necessary to develop a new wing section of low-drag type, to obtain accurate data in a low-turbulence wind tunnel of its lift and drag, to determine the effect of various types of flaps for increasing lift, and the action of normal and other lateral control devices."

The terrific new speeds also made it necessary to work out new methods of cooling the engines. The report goes on:

"It was also essential to re-examine the method of cowling and cooling both air-cooled and liquid-cooled engines at high air speeds. Special cowlings were required to handle the air needed to cool the engine, the oil radiator, the intercooler and, in the liquid-cooled type, the radiator. This work was based on theoretical analysis and proved in wind-tunnel and flight tests."

Propellers of the usual design are inefficient at the new extreme speeds.

"New propeller blade sections and new plan forms for the blade have had to be developed to keep the losses under those conditions to a minimum. Again theoretical studies and wind-tunnel tests together were necessary to arrive at a practical solution."

Research conducted this year to give America the best fighting air force in the world will be reflected after the war in greatly improved transport airplanes which should give the United States a lead in civil aviation.

"With the exception of dive-bombing problems and problems incident to armament installations, practically all the research of the Committee is directly applicable to civil types of aircraft," the report states. "Improvements in large two- and four-engine airplanes of the bombing type will undoubtedly be reflected in transport airplanes of tomorrow. New and improved engine installations, wing forms, and propeller designs developed for military types will be important factors in increasing the speed and efficiency of future civil aircraft."

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GEOGRAPHY

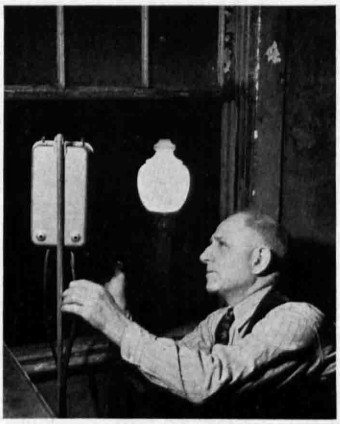
Alaskan Defenses Built At Fifty Below Zero

WITH daylight lasting only three or four hours and temperatures dropping as low as 50 degrees below zero Fahrenheit, U. S. Army Engineers are rushing defenses and air fields in Alaska to completion, Lt. Col. John R. Hardin reports (*The Military Engineer*, January). In such extreme cold, practically all construction materials must be thawed out before they can be used. Nails must be heated, or they would snap at the first hammer-stroke.

Men of the Corps of Engineers and

FREQUENCY MODULATION

Radio transmitters like this one of the new 10,000 watt station W71NY may make it possible for stations to stay on the air even during an air raid. The frequency of the carrier wave, instead of its amplitude, is modulated by the voice, which makes this system almost free from static and other external disturbances. The vertical coaxial antenna of this station is shown on the front cover of this week's SCIENCE NEWS LETTER.



BLACKOUT WATCHMAN

An "electric eye" focused on a street light outside his shop window acts as automatic blackout watchman for Andrew Tessier of Schenectady. When the street light goes out for an air raid or blackout, all the lights in the shop go out. This is a General Electric Company photograph.

civilian employes on defense building projects have to contend with Siberian conditions in interior Alaska, although winters in the southward-projecting "panhandle" strip are quite mild, Col. Hardin states. Cantonments and air fields are being established in some places where the soil below the two-foot level never thaws out.

Particularly trying is the job of getting anything done on the type of soil known as muskeg. This consists of a spongy mass of accumulated roots, moss and other plant materials, often several feet in depth, extremely boggy and unstable except when frozen hard. Air fields can be established in muskeg country only by scraping the soil away down to bedrock; and then the engineers have pools of water to contend with.

Water is a problem at all times, winter and summer. Average annual precipitation is 150 inches—three times that in the eastern United States. Storms are violent, too, sometimes making the unloading of tools and materials from boats very hazardous. Nevertheless, the work has gone forward steadily.

Says Col. Hardin: "It is a tribute to the resourcefulness of the men on the job that even the most difficult problems have failed to delay or disrupt this important defense construction."

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PUBLIC HEALTH

"Charge of The Light Brigade" Stops Measles, Fund Reports

Photons From Ultraviolet Ray Tubes in Bowls Above Children's Heads Halted Epidemic in Philadelphia

THE "Charge of the Light Brigade" that stopped measles in 22 primary and intermediate classrooms in Philadelphia and its suburbs, while the biggest epidemic on record raged in the rest of the schoolrooms of the city, is described in the annual report of the Commonwealth Fund.

The charge of this light brigade was directed by Dr. W. F. Wells and his wife, M. W. Wells, whose studies at the University of Pennsylvania the Fund has been helping to support since 1937.

The light brigade was made up of photons, particles of light. They made their charge from ultraviolet ray tubes hanging in aluminum bowls above the children's heads. Moving forward at a wave-length of 2,537 Angstrom units, which is a little shorter than that of the domesticated sunlamp, they met and destroyed whatever measles germs were lurking in the classroom air.

When measles began to pile up in Philadelphia in October, 1940, the report states, the children were ripe for it. During three years when there had been very little measles, the number who had never had it and were therefore susceptible to it had mounted enormously. More than one-fourth of the children in the primary grades of the Germantown Friends School were susceptible.

But the light brigade charged all day and every day in these primary classrooms. By May, when the epidemic had run its course, "nearly 60% of these younger children, who should have fanned the flame of the epidemic, were still untouched."

Among 141 of the susceptible children in the high-school and intermediate grades, unprotected by the light brigade, 88 had caught measles. Among 110 susceptible children in the primary grades, only 24 caught the disease, eight of these picking it up from someone at home, leaving only 16 who might have caught it at school.

In the Swarthmore public schools, where the light brigade also charged in the primary classrooms, practically the same results were obtained.

Even more important than stopping a measles epidemic and saving children from the dangers of this disease which are particularly great at younger ages, is the proof of a theory furnished by the charge of the light brigade.

According to this theory, measles and many other diseases, such as mumps and chickenpox, which explode suddenly into violent epidemics, are spread through the air. The germs of these diseases, it has long been believed, travel in the air on invisible droplets coughed, sneezed and quietly breathed into the air from human throats and noses. Reasonable as this theory seemed, evidence to support it was lacking for so long that many scientists discounted the importance of air in the spread of the disease.

The successful charge of the light brigade against measles seems now to show that "infection through the air is not only theoretically possible but quantitatively important."

The full worth of the light brigade in the war against disease will not be known until further painstaking studies have been made.

The war against disease of body and mind has been continued on many other fronts with the support of the Commonwealth Fund. Rheumatism and rheumatic fever, kidney disease and tuberculosis are among the diseases being attacked on the laboratory front, while in the field Fund-supported workers widen the application of present knowledge for fighting disease.

From England come reports that child guidance clinics and related services, launched during peace time with help from the Fund and manned by many Fund-trained workers, have "literally proved themselves under fire" as the war put new burdens on British children and strained community resources for their care.

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Parachutes *mildew* unless packed in refrigerated storage.

MEDICINE

Pearl Harbor Was Scene of Sweeping Victory for Drugs

Thorough Medical Preparedness, Quick Action and Success Of Sulfa Preparations Prevented Infections in Wounds

PEARL HARBOR was a sweeping victory for the new sulfa drugs and our soldiers who fight disease and repair human bodies.

The Army medical corps was alert, ready, and it scored the world's greatest success in any war in the fight against battle wounds, infections and death.

The story can now be told. It is detailed in a report made to the Army's Surgeon General James C. Magee, by Dr. Perrin Long, of Johns Hopkins Medical School, the man responsible for introducing the sulfa drugs into America. Dr. Long was accompanied on a mission to Hawaii by Dr. I. S. Ravdin, professor of surgery at the University of Pennsylvania.

In the Army hospitals there, the doctors saw badly wounded men who looked and felt well. They were "amazed" at what they saw. Men who by all past standards should have died were recovering, eager to get back in the fight. There was absence of pus in the men's wounds, mildness of post-operative reactions, and swift, clean healing of wounds.

Sulfa drugs plus good organization that gave the wounded prompt attention performed this wonder.

Even among men whose wounds had been contaminated with the fertilizer-dirty soil of Hickam and Wheeler Fields, and who had not had their wounds cleaned out by debridement for 24 hours, not a single massive infection was found 10 days later.

Infection, which in World War I killed 80% of the men with abdominal wounds alone, hardly occurred in Hawaii. Compound fractures of bones and injury of the flesh, for instance, showed that less than 4% such injuries became infected.

Not a single loss of arm or leg was necessary because of infection. The only amputations reported were those made by the shell splinter or other missile.

Credit for this remarkable record is shared by the sulfa drugs and the efficient preparations of far-sighted Col. Edgar L. King, surgeon-in-charge of the Army's medical forces in Hawaii.

In the spring of 1941, when most people thought Hawaii safe and such extensive preparations foolish, Col. King organized all civilian, Navy and Army medical forces to meet possible disaster.

When the attack started, the first medical man on the line was a young doctor who, as medical officer of the day, had gone out on Hickam Field at 7 o'clock on that fateful Sunday morning. Armed with a Flit gun, and accompanied by the crash ambulance, he was on routine duty to meet and disinfect a flight of U. S. bombers expected from the mainland. He noted a flight of planes coming in, and then the bombs dropped. He and the rest of the medical corps were ready. All Hickam Field's own ambulances were immediately "broken out." From Schofield Barracks and from Tripler, the Army's big base hospital, came more ambulances. From Honolulu came the milk and laundry trucks which had already been prepared for instant conversion into ambulances.

The sergeant in charge of medical supplies, when the first bomb fell at 7 a.m., threw open the great warehouse and loaded materials at once onto all his trucks, without waiting for a call for them.

At Hickam Field, Col. Frank Lane, surgeon-in-charge, immediately set up an efficient evacuation system with 12 ambulances so that the badly shocked among the wounded got first attention and those with a chance to live were not kept lying in the field while the ambulances were filled with men who would be dead before they reached the hospital, as might have happened under a less careful evacuation system.

When the wounded men arrived, their wounds were first debrided, that is, every bit of dead or dying flesh that could give food for germs was cut away. Then sulfanilamide was dusted into the wounds, 68 grams (more than two ounces) at a time. Then each man was given sulfathiazole by mouth, as a further aid in stopping invading germs before they could do any damage. That morning when the first alarm sounded, 14 pounds of sulfa drugs were brought up from the basement of Tripler Hospital, where hundreds of pounds were stored, in readiness for the doctors.

There was no shortage of supplies. Blood plasma banks had been prepared in advance. On Dec. 4, Col. King had withdrawn 58,000 surgical dressings from the warehouses and put them into the storehouses of the hospitals.

The medical epic of Pearl Harbor ends with two letters, just received by Gen. Magee from General Wallace DeWitt and Col. Emerson, of the Army's Letterman Hospital in San Francisco, where the first contingent of wounded from Hawaii have arrived.

All the men were in excellent shape on arrival, testimonial to the excellent treatment they had received. Col. Emerson emphasized the high morale and cheerfulness of these wounded men, concluding:

"They are in the best condition of any war casualties I have ever observed."

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ETHNOLOGY

Haiti Reported Giving Up Ancient Voodoo Cult

VOODOO shrines have been vanishing so fast in Haiti in the past few months that it will soon be hard to find a sacred fig tree or a post representing an African god, except in deep jungle, in all the West Indian republic.

An intensive missionary drive is credited with spurring the downfall of voodoo gods, by Dr. Alfredo Metraux, archaeologist, who has recently returned from Haiti bringing a rare collection of the discarded cult goods for the Smithsonian Institution.

Heretofore, it would have been impossible to make such a collection for science, Dr. Metraux explains. A ten-cent rattle ceremonially filled with voodoo power is worth hundreds of dollars —or was, before missionaries succeeded in convincing Haitians that Christianity and voodoo should not mix. Many prominent church members have been ardent voodoo cultists, Dr. Metraux explains.

Voodoo objects gathered by Dr. Metraux include drums, vases, wooden bowls, pipes, satchels of earth, stone axes and other prehistoric Indian-made articles, rattles, crucifixes and images of saints.

Voodoo worship is not particularly secret, says Dr. Metraux, but the black magic, which may accompany it, is.

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DEFENSE RESEARCH

Dr. E. C. Hughes (left) and W. E Scovill, of the new research laboratory in Cleveland of the Standard Oil Company of Ohio, are shown here with the model of the long heptane molecule which has been transformed into a ringform to make toluene, a vital ingredient in TNT, war explosive.

EVOLUTION

Darwin Looked Before He Theorized, Dr. Ritter Says

CHARLES DARWIN worked long on the facts of natural history before he adopted the theory of evolution to correlate and explain them, and even longer before he conceived his own theory of natural selection to account for the process of evolution. This is pointed out by Dr. William E. Ritter of the University of California, co-founder of Science Service (*Science,* Jan. 16).

In this, Dr. Ritter continues, Darwin differed from many of his zealous followers, who have a tendency to theorize first and seek supporting facts afterwards. He recalls receiving something of a shock on being "called down" by some other zoologists for quoting Darwin on this point, his critics' view seeming to be that "no real scientist ever begins a real research without a theory of some sort for a starter."

Present-day misinterpreters of Darwin, who try to see human life in terms of a bloodily-expressed law of the jungle, either do not know or purposely overlook one of Darwin's most characteristic observations, to which Dr. Ritter recalls attention in his article. To Darwin, he says, the highest of all natural attributes of man was expressed in his famous quotation:

"It is summed up in that short but imperious word 'ought,' so full of high significance. It is the most noble of all attributes of man, leading him without a moment's hesitation to risk his life for that of a fellow creature; or after due deliberation, impelled simply by the deep feeling of right or duty, to sacrifice it in some great cause."

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MEDICINE

War Budget for Polio Fight Must Be Substantial Elastic

Third Annual Report of the National Foundation For Infantile Paralysis Tells How Funds Are Spent

THE war budget for the fight on infantile paralysis, to come for the current year from the proceeds of the Celebration of the President's Birthday on January 30, must be substantial and elastic. This is brought out in the third annual report of the National Foundation for Infantile Paralysis, issued to the public by the Foundation's president, Basil O'Connor.

"No one can say with any degree of accuracy how much money the National Foundation should have to find the answer to present problems and how much it may require to meet those yet to arise," he declares, indicating that no budgetary limit can be set.

"That it will need to have substantial sums in reserve to meet new developments and emergencies is clear to all those close to its activities.

"The procedure which the National Foundation has been following thus far has been designed to bring out in clearer relief the real problems and the best methods to be used for their possible solution," Mr. O'Connor said. "As that picture becomes clearer, the National Foundation's activities will necessarily increase and expand.

"To discover, coordinate and disseminate knowledge of the cause of infantile paralysis, how it may be prevented and how its after-effects may be ameliorated, is at best a most difficult undertaking. It is, however, the job the National Foundation has set itself to do, and recent developments in the after-effects field, especially, have been most encouraging."

During 1941 the National Foundation spent $807,131.50 for research on the virus that causes infantile paralysis; for investigations of the possible relation of nutrition to the disease; for studies on after-effects of the disease and their treatment including the work of Miss Elizabeth (Sister) Kenny; for respirators, splints, frames, nursing and medical help and epidemic aid to communities, organizations and institutions during emergencies; and for education of professional and lay persons.

An additional $23,885 was spent for the organization of more than 1,000 new local chapters composed entirely of volunteers. Today 2,500 counties in the United States are served by such chapters. For their work of aiding needy infantile paralysis victims, $1,137,222 was left with the chapters in 1941.

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ASTRONOMY

Star Counting Machine Uses Photoelectric Cell

A DEVICE which allows double-quick counting of stars on a photographic plate has been successfully tested and used at the Warner and Swasey Observatory in Cleveland.

Dr. S. W. McCuskey reported on the use of this instrument before the meeting of the American Astronomical Society. His instrument is able to count stars as faint as the 15th magnitude, regardless of the number of stars on the plate.

At present, Dr. McCuskey said, the machine counts are made by an observer who places each star image in the sensitive beam of the photometer. Thus far completely automatic scanning of the plate has not yielded results accurate enough for statistical purposes.

The rate of counting, including the necessary calibration and setting, is about 2,000 stars per hour.

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MEDICINE

Emergency Action

In Case of Injury in Blackout, War Traffic or Raid Here Are Rules of First Aid For Life Saving

By JANE STAFFORD

DANGER of serious injuries in air raids, and blackouts without actual air raids, is now so imminent that you may at any time be obliged to help the victims of such disasters. Whether you are taking a course in first aid or not, the following 10 rules will help you to act efficiently in such emergencies. They are part of the first aid instructions issued by the American Red Cross in cooperation with the medical division of the Civilian Defense.

1. Keep the victim lying down.
2. Examine for injuries if not clearly seen.
3. Give immediate attention to serious bleeding, asphyxia (breathing stopped) and poisons.
4. Keep victim warm and yourself cool.
5. Call a physician — information needed.
6. Do not give an unconscious person anything to drink.
7. Keep crowd away.
8. Make injured comfortable and allay his fears.
9. Procure proper transportation.
10. Get name and address before victim becomes unconscious and fill out identification tag.

There are four procedures which you should learn how to do. These are: 1. giving artificial respiration to a person who has stopped breathing; 2. stopping serious bleeding or hemorrhage; 3. preventing or caring for shock; 4. protecting a person with broken bones from movements that will further injure or kill him.

Artificial Respiration

If breathing has stopped because of gas poisoning, drowning, electric shock or other reason, artificial respiration must be started immediately to save the victim's life. Here are standard directions for doing this:

Lay the patient on his belly, one arm extended directly overhead, the other bent at the elbow, and turn the head toward the extended arm so the side of the face will rest on the hand or forearm of the bent arm, and the nose and mouth will be free for breathing.

Kneel, straddling the patient's thighs with your knees placed such a distance from the hip bones as will allow you to place the palms of the hands on the small of the back with the fingers resting on the ribs, the little finger just touching the lowest floating rib, the thumb and fingers in a natural position, and the tips of the fingers just out of sight on the sides of the trunk.

With arms held straight swing forward slowly, so that the weight of your body is gradually brought to bear upon the patient. The shoulder should be directly over the heel of the hand at the end of the forward swing. Do not bend the elbows. This operation should take about 2 seconds.

Now, swing backward immediately to remove the pressure completely. After 2 seconds swing forward again. Thus, repeat deliberately 15 times a minute the double movement of compression and release, a complete respiration in 4 seconds.

Loosen Clothing

As soon as artificial respiration has been started and while it is being continued, an assistant should loosen any tight clothing about the patient's neck, chest or waist. Keep the patient warm. Do not give any liquids whatever by mouth until the patient is fully conscious.

Your job of reviving a patient who has been asphyxiated does not stop the minute he starts breathing again.

To avoid strain on the heart when the patient revives he should be kept lying down and not allowed to stand or to sit up. If the doctor has not arrived by the time the patient has revived and is conscious, he should be given some stimulant, such as 1 teaspoon of aromatic spirits of ammonia in half a glass of water or a hot drink of coffee or tea. The patient should be kept warm.

Resuscitation should be carried on in a safe place nearest possible to that where the patient received his injuries. He should not be moved from the point until he is breathing normally of his own volition and then moved only in a lying position. Should it be necessary, due to extreme weather or other conditions, to move a patient before he is breathing normally, resuscitation should be continued while he is being moved.

A brief return of natural respiration is not a certain indication for stopping the resuscitation treatment. Not infrequently a patient after a temporary recovery of respiration, stops breathing again.

The patient must be watched; if natural breathing stops, artificial respiration should be resumed at once.

In resuscitating a patient it often becomes necessary to change operators. The relief operator kneels beside the patient and swings forward and backward in unison with the one giving artificial respiration. At a prearranged backward stroke the operator swings off the patient on the opposite side from the relief operator, and the relief operator swings into position straddling the patient's legs to make the next expiration or compression stroke. With a little practice this relief can be accomplished within the 2 seconds of decompression without confusion and the regular rhythm maintained.

If you are taking a first aid course for a job as Civilian Defense worker, you will be taught what to do for serious bleeding. If you have not learned what to do and can think of nothing better, put a clean handkerchief or towel or your hand over the bleeding point and hold it tight.

Stop Severe Bleeding

Severe bleeding is one of the few conditions for which you must act quickly. Send for a physician or expert in first aid, but if the bleeding does not stop by itself within four or five minutes, do not wait longer before trying to stop it. Otherwise the victim may die.

If you know the six "pressure points" you can press your hand or fingers on them to stop bleeding instead of pressing directly on the bleeding wound.

For bleeding from scalp and forehead, or above the ear and eyebrow, the pressure point is just in front of the opening of the ear.

When bleeding is (*Turn to page 58*)

MEDICINE

Sulfa Drug Ointment Found To Cure Impetigo

SULFATHIAZOLE ointment cured impetigo, unsightly skin disease, in roughly one-third the 12 to 16 days usually required under other means of treatment, in a series of 60 cases reported in the *Journal of the American Medical Association* (Jan. 17).

The cases are reported by Dr. L. H. Winer and Dr. E. A. Strakosch of Minneapolis. They found the sulfathiazole ointment apparently safe and "more agreeable and cleaner" than ammoniated mercury ointment, cinnabar lotion, gentian violet or silver nitrate solution.

None of these treatments has been found wholly satisfactory, hence Drs. Winer and Strakosch propose the use of sulfathiazole ointment in the treatment of impetigo.

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NUTRITION

Don't Worry Over Vitamin A Supply

AMERICANS who have been worried about a possible war-caused shortage of vitamin A can relax. There is no danger of any immediate shortage of vitamin A capsules.

This vitamin is needed for general health, for promoting normal growth in children, and for protection against night-blindness, which might be a special danger during blackouts. Chief sources of the vitamin for putting up in capsules are fish liver oils. Danger of a shortage because of war interference with fishing has needlessly worried many people, sending them, according to reports, hurrying to drug stores to buy vitamin A pills much as women rushed to buy silk stockings last summer.

Fish liver oils are not the only sources of the vitamin. Liver of other animals, such as beef liver, is a good source of this vitamin. So are eggs, cream and butter.

Vegetables do not contain vitamin A itself, but they do contain coloring substances, or pigments, called carotenoids, which the body can make into vitamin A. One ounce of dandelion greens, for example, will give a day's supply of vitamin A. Dried apricots, chicory, kale, chard, mustard greens, turnip greens and spinach also furnish large amounts of the substance which the body can turn into vitamin A.

Many vitamin capsules of the kind containing more than one vitamin have in them two or three times as much vitamin A as is needed daily by the average normal grown person. Vitamin capsule manufacturers may be asked to reduce the amount of vitamin A in these multiple-vitamin preparations, in order not to waste it.

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PUBLIC HEALTH

Typhoid Deaths of 78 Cities Lowest Since 1910

TYPHOID DEATHS reported in 1940 of 78 U. S. cities surveyed since 1910 were only 172, the lowest number on record. So reports the *Journal, American Medical Association* (Jan. 17) on the basis of the 1940 census plus information from city health officers.

The *Journal* reports the rate for all cities as now "just about one half of one point per hundred thousand of population." No typhoid outbreaks have been recorded.

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SURGERY

Instrument Helps Surgeon To Look Inside Patient

A NEW supplementary instrument to help the surgeon look into the body and actually see an appendix or a bleeding stomach ulcer before he operates was announced by Dr. Joseph E. Hamilton, of the University of Louisville School of Medicine to the American College of Surgeons.

The new instrument is a blunt-tipped rod or "poker" with an insulated electrode. It is used with the peritoneoscope a periscope-like instrument which can be inserted through the abdominal wall to give the surgeon a view of the internal organs. The poker is used to maneuver the appendix, for example, into plain view if it is hidden behind a loop of intestines or adhesions. The accompanying electrode may be used to divide adhesions or to open benign cysts.

New or little exploited applications of the peritoneoscope developed in examination of 125 patients were reported by Dr. Hamilton. These include distinguishing between appendicitis and inflammation of the fallopian tubes, which may have symptoms similar to appendicitis; deciding whether or not gunshot and stab wounds of the abdomen are penetrating.

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IN SCIEN

AERONAUTICS—MEDICINE

Aviation Medicine Award To Army Surgeon

MAJ. HARRY G. ARMSTRONG will receive the John Jeffries award of the Institute of the Aeronautical Sciences in recognition of his researches that have aided the health and efficiency of both military and civil aircraft pilots.

Now in charge of research at the Army's School of Aviation Medicine at Randolph Field, Texas, Maj. Armstrong pioneered in studying the physiological and psychological effects of flying at high altitude and in high speed maneuvers. Repeatedly he was his own human guinea pig in dangerous flying experiments that set the standards for modern military flying.

Science News Letter, January 24, 1942

ETHNOLOGY

Arizona Indians Dressed Twin Children Alike

MOHAVE Indians of Arizona dressed little twin girls or twin boys alike, Dr. George Devereux, University of Wyoming sociologist, reports (*American Anthropologist,* October-December).

Cradles and dress of twin Indian babies were identical, except that boy and girl twins were indicated by different shaped cradles and cradle ornaments.

Visitors to the twins were expected to bring identical gifts, lest the twin discriminated against should take offense and return to heaven.

Dr. Devereux found that these Indians hold two contradictory attitudes toward twin children. One view is that twins live in heaven and come to earth for sight-seeing or other visiting purposes, and their arrival is a blessing and an especially happy event.

The other view, which Dr. Devereux discovered by interviewing an Indian at length, is that "ordinary people are better than twins." This Indian added, however, that the Mohave "have the same respect for twins as for other people."

Science News Letter, January 24, 1942

E FIELDS

PUBLIC HEALTH

Civilian Athletics Urged To Prepare for Army Duty

A NATIONAL program of vigorous, supervised athletic exercise and games for civilian men is urged by Lieut. Comdr. Albert R. Behnke, Jr., Naval medical expert in submarine and aviation medicine.

Purpose of Comdr. Behnke's program, which also would substitute the bicycle for autos for recreation, is to build men tough enough for high altitude flights, deep sea diving, and other "arduous military duty." Comdr. Behnke who gained national fame with his improved decompression treatment for agonizing divers' bends, makes his recommendation in *Military Surgeon* (January).

The article states: "The endeavor of medical officers to teach and train individuals to cope with the adversities of the military environment should in the broader field serve as a nucleus for a national health program.

"Although a rehabilitation program aimed at the correction of defects in personnel subject to the Selective Service Act is beginning to take form, the reservoir of civilian population must be imbued with a sustained will to physical fitness that produces health not measured in terms of longevity but in ability to stand up under arduous military duty.

"The success of this program will be manifest when the body of able population engages daily in supervised athletic games and exercises and when the automobile is discarded for recreation in favor of the bicycle."

Science News Letter, January 24, 1942

NUTRITION

Food Needed After Frightening Experience

DIRECTIONS for preparing refuge rooms for family use during blackouts all include advice to stock the room with some food. This is not solely a precaution against the possibility of your being unable to get any other food for several days. After the immediate emergency is over, even if there have been no casualties or serious property damage, you and your family should have something to eat promptly. Chocolate, candy bars or sweet crackers are the handiest and best food for such occasion.

You need to eat because after a bad fright of any kind, your body's reserve stores are depleted if not completely used up. When danger threatens, even such every day danger as having to jump out of the way of a speeding automobile, your entire body is automatically set to meet it. The adrenal glands, two little organs that rest like cocked hats on top of the kidneys, pour out enormous quantities of their hormone, adrenalin.

One effect of this is to raise the blood pressure. Another is to mobilize glycogen for instant use by the muscles, so they will be strong for as long as you need them to carry you out of danger.

Glycogen is a kind of sugar formed in the liver from the sugar and starches in the food you eat. It is stored in the liver there to be drawn on as the body needs it for energy. It is one of the fuels for keeping the body fires going.

During times of danger or fright, the body fires burn brightly, like the fire in a furnace under forced draft. Any fire under such conditions needs additional fuel to keep it going. Much the same thing happens in your body after the frightening experience, and you must add fuel, by eating, to replace what has been burned up.

Science News Letter, January 24, 1942

NUTRITION

Special Foods For Aged Predicted By Survey

SPECIAL FOODS for middle-aged and aged people may be the next step in nutrition, according to a food survey reported to the American Chemical Society by Dr. William A. Hamor, associate director of the Mellon Institute of Industrial Research, Pittsburgh.

"New advances have been made in infant feeding and the nourishing of 20,000,000 school children," said Dr. Hamor. "With less than 2,000,000 babies born a year, infant-food manufacturers are distending their markets with lines of products for older children. It has been predicted that the next step may be foods especially for the middle-aged and aged, an advance that may be nurtured by the growth of interest in geriatrics (science of aging)."

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MEDICINE

Bad Diet Blamed for Acne; X-Ray Held Best Treatment

DRUG STORE lunches which upset balanced diet are a principal cause of acne, unsightly pimpling of adolescents, Dr. Charles C. Dennie of Kansas City indicated before the American Academy of Dermatology and Syphilology meeting in New York.

"Acne is not only a disfiguring disease, but causes an inferiority complex in many of its young victims," said Dr. Dennie. "The sufferer is retarded in business, school and social life."

Dr. Dennie said diet cannot be considered merely as a caloric phenomenon.

"A diet sufficient in caloric energy may be deficient in carbohydrate and vitamin content. A good many skin and other diseases are due to an imbalanced caloric-vitamin regime."

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PHYSICS

Panoramic X-Ray Provided By Invention

WHAT might literally be called an all around or panoramic X-ray machine comes from a German inventor, Ernst Schiebold of Leipzig, who has received patent 2,259,708.

In the use of X-rays to determine crystal structure or the arrangement of the atoms in a crystal, several shots from different directions are required in order to determine the arrangement in space.

The making of these many pictures takes time and if, as is frequently the case, the scientist wishes to determine the effects of strain, changes may occur before all the pictures can be made.

With the machine invented by Mr. Schiebold, all points of view are combined in one picture with one exposure. And the coverage is much more complete than is possible with any series of separate exposures.

The X-ray source is a ring that is supported a short distance above the object to be rayed. The views caught on a single film are like the successive views an observer would get if he walked around a circular balcony and looked down upon an object in the center of the rotunda.

The inventor has added a second X-ray source directly above the object.

With all these views, taken simultaneously, the actual arrangement of all parts of the object in space can be seen.

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from the face below the eyebrow, the pressure point is the side of the jaw just in front of the angle of the jawbone.

When bleeding is from the neck or a cut in the throat, put your finger tips at the side of the neck just beside the windpipe and put your thumb behind the neck. Then press with the balls of your fingers inward against the backbone.

For bleeding from shoulder or armpit, tip the head toward the injured shoulder, put your thumb against the side of the neck just behind the collar bone and press down against the first rib.

Pressure point for bleeding from the arm is on the inner side of the arm just below the armpit.

When bleeding is from the leg, the victim should be lying down and pressure is applied by pressing downward, with your arm straight, pressing the heel of your hand into the middle of the groin.

If you are trying to save an injured person from bleeding to death, do not take time to make a tourniquet. First use pressure with your fingers or hands, as described. While you are doing this, let an assistant prepare the tourniquet if you cannot get a doctor or trained first aid worker to the scene quickly.

Use Wide Tourniquet

A tourniquet can be made from belt, stocking, handkerchief or any strip of cloth at least two inches wide. Never use a wire, rope, or any similar material such as a sash cord.

The tourniquet should be put on arm or leg a hand's breadth below the armpit or base of the groin. Wrap it twice around the arm or leg and tie with a single knot. Put a stick (or a pencil might do) on the knot, tie a square knot to hold the stick in place, and twist the stick tightly. Tie the ends of the stick in place to keep it from untwisting.

First aiders are taught to mark large letters "TK" on the victim's forehead, using a skin pencil or a lipstick. This is to show the doctor or hospital attendants that the victim has a tourniquet on, so they may loosen it if necessary.

First aiders are also taught to loosen a tourniquet, by untwisting the stick without removing it, every 15 minutes, and to tighten it again if bleeding starts again.

Surgeons have told me, however, that the chief danger in amateur use of tourniquets is of failing to make them tight enough. In actual practice, tourniquets have been left tight for many hours and the patient has survived without developing gangrene.

The danger of not having the tourniquet tight enough is that it will constrict the veins but not the arteries. These are further below the surface of the body and require more pressure to constrict them. Unless the arteries leading to the bleeding wound are constricted, the heart, working faster than ever, will keep pumping blood through them and out of the body through the wound till there is not enough blood left in the body.

Some degree of shock follows all accidental injuries. Since it is often a cause of death, you may be able to save an injured person's life if you know what to do for it. One surgeon has said that of the three or four most important things to know in case of accident, one is how to recognize and treat shock.

This condition is not to be confused with apoplexy, which is also sometimes called "shock."

You can recognize the shock that follows injuries by the patient's pale face, anxious expression and cold, clammy skin. Great weakness, an "all-gone" feeling, are characteristic. In severe cases, the patient may lose consciousness. He may be nauseated and vomit, and he may have a severe chill. Usually he does not take much interest in what is going on around him and does not complain of pain, so you cannot depend on his telling you whether he has other injuries.

The patient with shock should lie flat with his head low and feet raised. Wrap him up in blankets, coats, or newspapers, putting them under as well as over him if you are sure he has no broken bones and so can be moved safely. Use hot water bottles or hot bricks or stones, but be careful not to burn him with these. He probably will not tell you that they feel hot, so you must be extra careful they do not burn.

If he is conscious, hot tea, coffee or soup or milk can be given. Aromatic spirits of ammonia—one teaspoonful in one-half glass of water—may also be given as a stimulant.

Do not give alcoholic stimulants. Do not give anything to drink if the victim is unconscious or injured internally.

Get medical aid without delay.

Shock may not appear for some time after the accident, so do not let the victim walk away by himself, even if his injuries seem slight. Keep him quiet and warm until a doctor has seen him.

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PHYSICS

Scientists Having Trouble Over Name for X-Ray Machine

THE SCIENTISTS are having christening trouble with the latest and most effective machine for producing powerful radiation, the device that promises to rival the famous cyclotron in atom-smashing (*See SNL,* Dec. 27, p. 403).

Announced as the "rheotron," it is also being called the "betatron." It was built by the General Electric Company, and is the invention of Dr. Donald W. Kerst of the University of Illinois. "Betatron" now leads in favor as a name, because it is the choice of Dr. Kerst. The 20,000,000-volt doughnut-shaped electron-whirling X-ray machine has been removed to the University of Illinois, and the G. E. Company is constructing a 100,000,000-volt machine of the same kind.

The name rheotron derives from the Greek word rheo which means to flow. And the machine does cause electrons to flow. But the cyclotron, invented by Prof. E. O. Lawrence of California, also causes protons and other heavy atomic particles to flow, so that the name rheotron could appropriately apply to both. So could the name cyclotron, since each machine causes flow in circles.

The distinguishing feature of the new machine is that it whirls electrons, the lightest constituents of the atom, while the cyclotron whirls the heavy parts. This distinction is emphasized in the name betatron, because "beta rays" was the name given to the electron rays of radium.

In the same way the name "alphatron" might be given to the cyclotron because "alpha rays" was the name given to the heavy particle radiation from radium. However, these rays consist only of alpha particles which are the kernels of helium atoms, whereas the cyclotron

will whirl any heavy particle that has a positive charge.

Radium also gives off gamma rays which are similar to X-rays but more penetrating or "harder" than are produced by the usual X-ray machine. Cosmic rays produce gamma rays that are harder than any that have yet been produced artificially.

The 20,000,000 volts of the betatron, more than twice the voltage of any previous electron accelerator, imparts to its electrons a higher speed than any ever before obtained artificially. When these electrons strike a target, they produce X-rays more penetrating than those of radium.

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MEDICINE

Virus From 'Flu Patients Gives Mice Pneumonia

Discovery May Be Clue for Solving a Pneumonia Problem That Has So Far Proved Baffling

DISCOVERY in throat washings from influenza patients of an apparently new, unidentified pneumonia virus is announced by Dr. Clara Nigg, of the Minnesota State Department of Health Influenza Research Laboratory (*Science*, January 9).

The discovery may be a clue for solving a pneumonia problem that has so far proved baffling to scientists. This concerns the cases, reported in increasing numbers during the past few years, of atypical pneumonia. In some cases this has been a mild disease which might be called influenza, escaping diagnosis as pneumonia unless chest X-ray pictures were taken. Even in more severe cases reported, the patients were sick for several days or a week with influenza symptoms before the pneumonia symptoms appeared.

Cause of these atpyical pneumonias has not yet been discovered. They are not caused by any of the 32 or more types of pneumococci which cause typical pneumonia. Many scientists suspect that atypical pneumonia is caused by a virus and it is sometimes called virus pneumonia. The identity of the particular virus that causes the disease, however, has not yet been determined.

The virus reported by Dr. Nigg caused pneumonia in mice that had been inoculated with throat washings from influenza patients. Both this virus and the lung condition it causes in mice are similar to a pneumonitis virus and a meningo-pneumonitis virus discovered by other investigators in studying human patients.

Whether they are all the same or three different viruses and whether, if they are different, any of them is the cause of atypical pneumonia remains to be determined.

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FORESTRY

Tropical American Timber Resources Are Immense

IMMENSE quantities of timber stand unused in Central and South American forests; in the Amazon valley alone there is a forested area as great as the whole United States, Prof. Samuel J. Record of the Yale School of Forestry told the Society of American Foresters, meeting in Jacksonville, Fla. Yet, paradoxically, there are acute timber shortages in Latin America, frequently within a few miles of virgin forests, and wood users often import lumber all the way from the United States and Canada.

The answer to the paradox, Prof. Record pointed out, lies partly in imperfect handling of local timber resources by native workmen, partly in lack of knowledge of properties and possibilities of tropical American woods, partly in instability of sources of supply and uncertainty of demand in the export market.

The average North American's knowledge of South American woods stops with mahogany and, perhaps, cigar-box cedar which is now little used. Yet there are dozens of kinds of timber, of all weights, densities and adaptabilities, which might advantageously supplement our own diminished supplies of native woods.

A good deal of money has been lost by private individuals and companies in sporadic efforts to introduce South American lumber to the North American market. To promote a real and lasting development of trade possibilities in this field, a great deal of research on tropical woods is needed, and Prof. Record suggested that now seems to be the appropriate time to undertake such a research program on a comprehensive Pan-American basis.

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Surprises in Research

RESEARCH in tropical forestry affords innumerable surprises, Arthur Bevan of the U. S. Tropical Forest Experiment Station in Puerto Rico told the meeting. Rules that hold good in temperate-zone forestry simply don't hold in the tropics, he said, and some of the results obtained in field experiments seem "just screwy." As an example, he cited one case where young trees kept out of the ground for 14 days before replanting showed far better survival and more rapid growth at the end of the first year than similar trees planted in the same plot after only a day or two out of the ground.

Sound forestry principles are being applied in timber harvesting by the little Republic of Haiti, Mr. Bevan stated. Haitians have long depended on imported lumber from the United States, but prices have gone up so steeply that they have undertaken to produce their own lumber from pines on their own uplands. They are not "cutting clean", after the earlier ruinous plan still followed by many American lumber concerns, but are using selective logging, leaving all trees of less than a given diameter uncut, to grow up and refill the forest.

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Timber Conservation Urged

WITH overseas sources largely cut off, and at the same time greatly increased demands for lumber to build cantonments and for wood pulp to use in paper, explosives and war chemicals industries, American forests are going to have to yield the maximum of wood with a minimum of waste. Measures for the conservation and renewal of forests

in the South received major attention of the meeting.

J. E. McCaffrey of the International Paper Company told of progress of forestry in timberlands owned by industrial concerns, which comprise about 40% of the 200 million acres of forest in that part of the country. Although scientific forest management in the South began 50 years ago, when Gifford Pinchot put the woodlands of a large Virginia estate on a sound basis, its greatest development has taken place since 1925. Prior to that time there were less than half-a-dozen trained foresters exercising their profession in industrially owned forests in the South. Today 220 of them are employed on full-time basis by Southern industrial timber owners.

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AGRICULTURE

Imported Plant Products Now on Home-Grown List

Drug, Fabric and Rope Plants Once Imported From War Areas Are Now Being Raised in This Hemisphere

MANILA is cut off temporarily, but Uncle Sam is still able to get at least a certain amount of Manila hemp for necessary naval cordage. Thanks to botanical research conducted in the U. S. Department of Agriculture in peace years, wartime supplies of a number of formerly imported plant products are getting on a basis of home, or at least Hemisphere, production, states Dr. E. C. Auchter, chief of the Bureau of Plant Industry in his annual report to the Secretary of Agriculture.

The abaca plant, from which Manila hemp is made, has been brought into fairly large-scale production in Central America, and a great increase in acreage is expected for the current year.

Other problems in plant production which were at least partly solved by research conducted before the outbreak of war include:

Development of cotton varieties with extra-long staple, formerly imported from Egypt, now grown in our own Southwest. These cottons are valuable in making fabrics for parachutes and other aviation uses.

Fiber flax, at one time almost out of cultivation in the United States, now staging a comeback thanks to improvements, especially in the direction of disease resistance.

Introduction of drug plants. Normally unprofitable because of competition of low-cost hand labor abroad, these now command high enough prices to repay cultivation under American conditions. It is estimated that the addition of a mere 3,500 acres in assorted drug plants will take care of our ordinary needs.

New soil-building plants, notably grasses and legumes, to recondition exhausted soils and check the progress of erosion.

Cultivation of rubber in the American tropics has been much talked of, but it must be recognized that this program is a long-time one, and that benefits will accrue in the post-war period rather than during the immediate emergency. However, the Department's scientists did get about ten million choice rubber seeds out of the Orient just in the nick of time, and these are now coming along in nurseries in suitable spots in Central and South America.

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Vicious *tiger sharks* are captured alive by piercing them with steel-pointed spears which shoot an anaesthetic into the struggling fish, rendering them unconscious in 60 seconds.

AGRICULTURE

New Way of Planting Beets Stops Back-Breaking Labor

LESS of the heavy "stoop" labor which has always been held against the beet sugar industry, and more sugar production for a country and a world at war, are promised by a curious turn of invention which will be widely used throughout the immense sugar-growing area of the Western U. S. in 1942.

Incidentally the industry has profited from a hard lesson which it learned in 1915-18, when every pound of beet seed came from abroad. Huge seed plantations are maintained, and every pound planted in the U. S. is now raised here at home.

The beet seed ordinarily grows from two to four germs, in a single woolly outside covering. Until a year or so ago, it was necessary to plant these hulls whole. This meant that the young beets came up two to four in a clump, and in a virtually solid row like young lettuce.

Since the optimum space between beets is about a foot, this in turn meant that thousands of people, mostly Mexicans, had to crawl along the rows and, by hand, separate the clumps and pull out the surplus beets.

Roy Bainer, a research associate of the U. S. Agricultural Experiment Station at Davis, Calif., and his associates there worked out a process to "crack" the woolly hulls and thus release the single seed-units for planting singly.

The process consists essentially of passing the seeds between a disk and a moving belt. It required delicate adjustment to "crack" the hulls without damaging the seed-units. But it has been done.

The result is that farmers can now plant beet seeds singly, with the aid of new planting machinery which is also being developed, and though they cannot quite plant them just where they want them, they can plant them far enough apart so that men with long-handled hoes can now pass rapidly along the rows and deftly clip the unwanted beets out of the soil. A man can now thus thin beets up to an acre a day.

There will be thousands of pounds of "singled seed" planted next spring. Demonstrations were conducted all over the beet country this year under the auspices of the beet-sugar companies.

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CONSERVATION

NATURE RAMBLINGS by Frank Thone

For the Long Pull

WHEN we went into the first World War, nearly 25 years ago, it was with the almost light-hearted conviction that it wouldn't last very long. The Allies had boxed the once overwhelming Central Powers to a weakened standstill; all we needed to do was go in and help deliver the knockout punch. And so it came to pass.

Because the crisis was expected to be short and sharp, we strove for maximum effect in a hurry, in civil production as well as on the field of battle. We slashed recklessly and wastefully into our best stands of timber, we plowed up millions of acres of virgin grassland for wheat-fields that proved to be only temporary, we tore at all our natural resources with equal abandon and disregard of the principles of conservation. We were out to land a conclusive wallop, and we didn't care if we skinned our knuckles doing it.

The feeling is different, in this new World War. Nobody professes to know how long it will last, but everybody grimly calculates on a long struggle. Many talk in terms of another Napoleonic epoch—and it took the world 20 years to shake off that conquest-fever.

In keeping with our expectation that we are going to be fighting for a long time, it is fitting that we use our resources more carefully now than we did in 1917-18. Conservation practices should be made more efficient, rather than relaxed. We are not out to score a one-round knockout, but to outlast a powerful opponent and beat him to the ground, perhaps after many rounds of exhausting fighting. We must therefore husband our strength, guard our wind.

Fortunately, there are evidences that efforts in this direction are being made. While some over-eager landowners have been plowing up new land in the former Dust Bowl, bent on cashing in on higher wheat prices, and some stockmen are exerting pressure to load more cattle and sheep on range in the public domain, on the whole farmers, ranchers and range managers have thus far "made haste slowly." There is no urgent shortage of food at present, and it is questionable if the need for new buildings is so acute that we need to resort to wasteful lumbering practices in order to supply it.

It would seem that the best course for the long pull would be to use our resources fully but as thriftily as possible, at the same time so mobilizing our machinery of extraction and production that we can draw heavily on our reserve capital in a minimum of time if future developments should seem to justify extreme measures. In that way we are most likely to outlast our enemies, and still have the knockout punch ready in the last round.

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GEOLOGY

Pacific Northwest Iron And Steel Industry Foreseen

Discover Rich Iron Ore Deposits Less Than 700 Miles From Seattle Along Inside Passage Route

CREATION of a great iron and steel industry in the Pacific northwest to provide these basic war metals now vitally needed, is believed possible by Department of Interior geologists with their discovery of rich, high grade iron ore deposits in Kasaan Peninsula, southeastern Alaska.

The deposits are less than 700 miles from Seattle by the famous "inside passage" along the Canadian coast protected from submarines by off-shore islands.

With limitless power now available from Grand Coulee and Bonneville dams the Pacific northwest's dream of an iron and steel industry equal to Youngstown and Bethlehem becomes more real, the Government geologists point out.

Two crack geologists of the Interior Department's Geological Survey have just announced the iron deposits on the Alaskan peninsula are far richer than even Alaskans suspected. They hope private industry will take the hint and send other geologists to verify their find.

Copper was mined 30 years ago on the Kasaan Peninsula, and in 1917 the area was appraised as a "possible" source of iron. John C. Reed and George O. Gates of the Geological Survey, however, this year found the iron deposits far richer than they expected.

Their examinations appraise the iron content of the ore as high as 60%.

Geologists Reed and Gates assert: "Many of the individual bodies of high-grade magnetite probably contain between 25,000 and 2,000,000 tons each, and some of the bodies may contain even more than 2,000,000 tons. These substantial deposits, if their grade holds with depth, may have national significance in connection wtih the large hydro-electric installations at the Grand Coulee and Bonneville power projects. The availability of large quantities of cheap electric power in the Pacific Northwest area, coupled with the needs for iron and steel of the Nation's war machine, focuses attention of expanding industrialization not only on the Kasaan deposits, but also on similar deposits on Texada and Vancouver Islands, B. C., and near Copper Mountain, Alaska.

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New Machines And Gadgets

Novel Things for Better Living

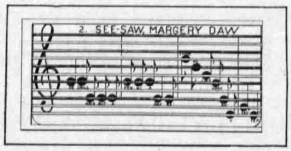
Photographs can be made in total darkness by use of an ordinary flash bulb, strange as it may seem. But the bulb is coated with a special dye which stops all the light from getting out except the invisible infra-red rays. An infra-red sensitive film must of course be used.

New hydraulic vise is said to save time and labor in small vise work. It is operated entirely by the foot, thus leaving both hands free to set the work. Stepping on one pedal moves the vise jaws up to the work. A second pedal applies pressure up to five tons. A third pedal releases the jaws.

The barber can now comb your hair and clip it too with the same tool—a combination comb and clipper recently patented.

Your portion of ice cream will be more quickly served to you if an electrically heated scoop which has recently been patented is used. The bowl being kept continually warm digs into the ice cream easily and the ball of ice cream slips easily out of it.

A musical instrument in the nature of a toy but which can aid a child in learning to read music has recently been awarded a patent. The keyboard consists of a series of long horizontal



rods extending from left to right and corresponding to the musical staff. A sheet of music can be drawn under the rods and adjusted so that the lines of the staff register exactly with the rods. The child has then only to strike the notes as actually written on the sheet of music, and the tune is rendered by a xylophone or similar instrument.

Friend, bill collector, or prowler? A device in your front door which would enable you to inspect your caller before you admit him, but would not reveal your presence, is now available. It is a sort of stubby telescope set in the door, the two lenses flush with either side. The outside lens may be disguised with a decorative design and fitted into the door knocker. But even if the intruder should put his eye to the lens, he would not see you as he would through a keyhole, because this optical arrangement does not work the same both ways.

Two tooth brushes are sometimes prescribed by the dentist. How awkward for a large family! But help comes all the way from Australia. A gentleman down there has designed a tooth brush with bristles on both sides, which may of course be of the two required kinds. The handle also ends in a point, which may be used as a toothpick. Thus all your household dental operations may be performed with the one implement. The design has been patented.

Rubber must be saved to the utmost in these days. Washers, for hot water faucets, of synthetic rubber have been found by tests to be superior to washers of natural rubber. The testing machine condensed five normal years of use into 50 hours by opening and closing the faucet 30 times a minute. The water was maintained at 180 degrees Fahrenheit. Washers of natural rubber cracked under this treatment causing the faucet to leak. The synthetic rubber washers showed only moderate wear and were still tight.

Riveting of airplanes in places where the far end of the rivet cannot be reached, has been solved in another unique way—the other being the famous explosive rivet. In this case, the rivet is hollow like a thick walled tube. A rod or shank, considerably longer than the rivet, fits in the hollow space. This shank has a head on each end. The whole thing is inserted in the rivet hole, the rivet itself being pushed in until its head is against the plates to be joined. A special machine then pulls the shank with such force that the head on the far end is forced into the hollow rivet, expanding it so that it clinches the plates together. The protruding near end of the shank is then cut off flush with the top of the rivet head.

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, D. C., and ask for Gadget Bulletin 88. Science News Letter, January 24, 1942*

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SCIENCE CLUBS OF AMERICA

JUNEAU, Alaska—This year the Irate Ions of Juneau High School have set up two divisions; the first a science group and the second representing photographic interests. Last year the Irate Ions, who are sponsored by Edna Harpole, science instructor, put on a very successful photographic "Scavenger Hunt" in which subject titles were written upon slips of paper and drawn from a hat. The object was to get the picture designated by the paper slip and produce a finished print within two hours. Many of the photographic members of this club already have been asked to do photo finishing. The science group produces assembly programs, individual projects and conducts experiments in candle making, glass etching, metal working and photocells.

MIDDLETOWN, Md.—During the first half of the year the Junior Scientists of Middletown High School practically finished the first part of their study of airplanes, including the growth of the aviation industry, the makes and types of planes and the people who were responsible for the development. Coming months will see club members branching into the study of the various methods of communication; telegraphy, telephony and radio. This club is sponsored by Beverly Feaga Stupp, science instructor.

FLINT, Mich.—Slides and various mechanical devices to demonstrate positions of the principal stars and constellations and to show the movement of the planets and other heavenly bodies are being made by members of the Alpha Astronomy Club at Emerson High School.

Public demonstrations and night observations are carried on avidly. Members also engage in round-table discussions and participate in their own "Hobby Lobby." The club is sponsored by teachers Elizabeth Norton and Ralph Brown.

DENVER, Colo.—The Biology Club at St. Joseph High School keeps the school bulletin board well posted with photographs, clippings and other bits of information to show the part science plays in America's national defense program. Members are also making a thorough study of nutrition. As a part of this investigation they plan the meals and school lunches. The group is sponsored by Sister Mary George, R.S.M., biology teacher.

SIDNEY, N. Y.—A magical-chemical tricks program is produced by the Bi Phi Chi Club of Sidney Central School for the local Rotary Club. The same student scientists hold a formal dance in the spring, using the profits for the purchase of equipment for the Science Department of the school and to cover the cost of a trip to New York City. Sponsor of the club is E. O. Myers, science teacher.

COLORADO SPRINGS, Colo. — The Pikes Peak Chemistry Club at Colorado Springs High School uses the symbolism "P_2 C_2". The members have been conducting experiments with crystals, dyes and drugs, including cosmetics, and have been assaying mineral ores. The club is sponsored by Audrey Gill, chemistry teacher.

NEW YORK, N. Y.—Many science club sponsors have reported to Science Clubs of America that they are awarding 24-karat gold-plated Science Clubs of America insignia to club members for extraordinary effort and exceptionally good work.

MINNEAPOLIS, Minn.—Members of the Folwell Science Club are preparing an exhibit which will show the making of urea plastics. This will be permanently exhibited at the Folwell Junior High School, and also will become part of one of the science shows the members are planning to hold. Science teacher Holmquist is sponsor of the club.

CLEVELAND, Ohio—The Louis Pasteur Science Club of St. Joseph Academy, sponsored by Sister Mary Clement, science teacher, aims "to develop initiative, self-reliance and a sense of responsibility." Each member plans her own project and then leads in explaining the exhibit and discussing its value. Meetings are held regularly during which things recently invented or discovered are brought up in general conference.

WASHINGTON, D. C. — Members of the Searchers of Truth at Saint Rose High School are conducting a detailed study of insects. An order of insects is assigned to one or more members and these members then prepare the material for a lecture which is presented to the class as a whole. At the end of the school term each member must hand in an original discussion on a self-chosen scientific topic. The sponsor of this club is Socorro Rodriguez, teacher.

LYNDHURST, N. J.—All members of the Junior Engineering Club have an opportunity of creating something worthwhile in science and a chance to become laboratory assistants at the Lyndhurst High School. Enthusiastic young—and old—people always are anxious to assist an instructor. To them an opportunity to do so is ample reward for good work. This club is sponsored by Rubert R. Page.

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● RADIO

Saturday, January 31, 1:30 p.m., EST

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

Dr. Homer L. Shantz, principal biologist in charge, division of wildlife management, U. S. Department of Agriculture, will discuss how forestry is vital in the war.

Listen in each Saturday.

Tuesday, January 27, 10:15 p.m., EST

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.

BACTERIOLOGY

Chemical Remedies From Germs Rivals to Sulfa Drugs

Nearly a Dozen New Weapons For Fighting Disease Have Been Made From Soil Bacteria and Molds

FROM germs living in the earth itself and from common molds like those that spoil bread, nearly a dozen new weapons for fighting disease have been obtained.

These new chemicals, some of them powerful enough to rival the sulfa drugs in stopping germ invasion of the human body, are specialists in their germ-eat-germ line of warfare, it appears from reports to the Society of American Bacteriologists, meeting in Baltimore.

Some of these germ chemicals can kill other germs outright. Others, unable to kill germs, can nevertheless stop their growth, Dr. Selman A. Waksman and Dr. H. Boyd Woodruff, of the New Jersey Agricultural Experiment Station, reported.

Gramicidin, already being used in treating patients, is most specific, acting primarily on tiny round germs labelled gram-positive micrococci.

Penicillin, another of these germ chemicals which has already reached the stage of practical use, and two other substances from different microorganisms, pyocyanase and pycanin, were similar in their action over the whole range of germs in the tests, Dr. Waksman reported.

Some germs are killed by penicillin and some only stopped by it, Dr. Gladys L. Hobby, Dr. Karl Meyer, Dr. Martin H. Dawson and Dr. Eleanor Chaffee, of Columbia University, reported.

In tests at the Mayo Clinic, reported by Dr. Dorothy Heilman and Dr. Wallace E. Herrell, gramicidin was more effective than penicillin against one kind of streptococcus and a pneumonia germ but penicillin was more effective against another streptococcus and a staphylococcus organism.

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Poison From Flu Bacillus

PROTECTION against some of the ailments called 'flu, colds, or grippe may be achieved through development of a discovery announced by Dr. Rene J. Dubos, of the Hospital of the Rockefeller Institute for Medical Research.

A toxin or poison from the influenza bacillus has been obtained by Dr. Dubos in the form of a dry powder. A tiny speck (one-tenth of a milligram) of this powder when injected into rabbits kills them within a few hours. But this lethal stuff can be used to protect rabbits against both the poison and the living germs which produce it. The blood of immunized rabbits will in turn protect other rabbits from either the poison itself or the living germs.

The germs or bacilli that produce this poison are called influenza bacilli, but they are not the same as the virus which causes true epidemic influenza. These bacilli, however, can cause serious sickness of an influenza-like nature. They may invade the body after the influenza virus and make the attack more severe. They may be the cause of some of the baffling attacks of illness that appear to be influenza or grippe or even pneumonia in which neither the influenza viruses nor the pneumonia germs are found.

These influenza bacilli were discovered during the 1918 influenza epidemic, and for a time were thought to be the true influenza germ, which is how they got their name. Dr. Dubos' studies of these bacilli and their poison may help solve the problem of what part these bacilli play in human sickness and how to guard against them.

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Chemists have produced "self-cleaning" *house paints,* which remove dirt layers by the action of rain, wind, and sun.

Myrtle plants are found useful in camouflaging naval ammunition storage "igloos" because myrtle stays green the year round and does not burn easily.

The Consumers' Guide, Department of Agriculture publication, says. "You usually have to drink 2 cups of tomato juice to get as much *Vitamin C* as you get from one cup of orange juice. But of course you want to figure costs per cup, too."

•First Glances at New Books

GENERAL SCIENCE

THE UNIVERSITY AND THE FUTURE OF AMERICA—*Stanford Univ. Press,* 274 p., $3. Important and inspiring comments on the present and the future given forth at the Fiftieth Anniversary of Stanford University. Those who contribute chapters are Isaiah Bowman, Walter Bradford Cannon, Edwin Francis Gay, Herbert Hoover, Edwin Powell Hubble, Herbert Spencer Jennings, Charles Franklin Kettering, Ernest Orlando Lawrence, Archibald Macleish, Robert Andrews Millikan, Lewis Mumford, William Fielding Ogburn, Roscoe Pound, Aurelia Henry Reinhardt, Edward Lee Thorndike, and Ray Lyman Wilbur.

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ETHNOLOGY—SOCIOLOGY

THE HAITIAN PEOPLE—James G. Leyburn—*Yale Univ. Press,* 342 p., $4. Tells the story of Haiti, how its social structure evolved after independence in 1804, and analyzes the African, French and local influences which have shaped life patterns in this next-to-smallest of Latin-American republics.

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GEGRAPHY

LATIN AMERICA, A Descriptive Survey—William Lytle Schurz—*Dutton,* 378 p., $3.75. Treating Latin America as a unit, this historian and journalist emphasizes the enduring traits and conditions of this part of the New World, which make it distinctive. The author has had 30 years experience in Latin America, and his account is of the factual, comprehensive type, stressing economics, politics, cultural relations, and other basic problems.

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GEOGRAPHY—ETHNOLOGY

YUCATAN—Lawrence Dame—*Random House,* 374 p., illus., $3. A laconic title for a book crammed with the experiences and observations of a newspaper man who has specialized in travel and who writes easily and well. He describes Yucatan's city and village life and its jungle ruins, its modern and ancient Mayan Indians, and what it is like to own and live in a thatched house in America's tropics.

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ZOOLOGY

UNDER THE SEA-WIND, A Naturalist's Picture of Ocean Life—Rachel L. Carson—*Simon and Schuster,* 314 p., illus., $3. Stories out of the life histories of sea creatures—birds, fishes, invertebrates—dramatically but accurately told, and superbly illustrated. A book to be treasured by anyone who has felt the strong charm of the sea. A Scientific Book club selection.

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METEOROLOGY

INTRODUCTION TO METEOROLOGY — Sverre Petterssen—*McGraw-Hill,* 236 p., illus., $2.50. A textbook intended for use in the courses in meteorology that are coming to be a standard part of the curriculum in many American colleges and universities. It assumes no previous acquaintance with the subject on the part of the student. Stress is placed on underlying principles rather than on detail, and mathematics is kept to a minimum.

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ENTOMOLOGY

A LOT OF INSECTS, Entomology in a Suburban Garden — Frank E. Lutz—*Putnam,* 304 p., illus., $3. Dr. Lutz here tells, in his inimitable chatty style, a lot of fascinating facts about a lot of insects, all of which can be found in the average suburban garden. Most householders will be astonished to learn of the size and variety of the "zoos" they are unconsciously keeping. Maybe the book will stimulate some readers to do a little back-yard exploring on their own.

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MICROBIOLOGY

THE MICROBE'S CHALLENGE—Frederick Eberson—*Jaques Cattell Press,* 354 p., $3.50. Microbes and what they mean to man, interestingly told. The author is director of laboratories in one of the large public hospitals in Washington, D. C., therefore qualified to speak as one having authority.

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ENGINEERING

TRAINING OXY-ACETYLENE WELDING AND CUTTING OPERATORS—Oxy-Acetylene Committee, comp.—*International Acetylene Assn.,* 88 p., 25c., deluxe edition 75c. In view of the shortage of welders and of experienced instructors, this book is offered in the hope of speeding up instruction in this important art. It outlines the courses to be given and the practice material to be used, both for welders and for inspectors.

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BIOGRAPHY

JULES VERNE—Kenneth Allott — *Macmillan,* 283 p., illus., $3. Jules Verne is a name vividly associated with the romance of forecasting scientific achievements, but the romantic career of Verne himself, is just now getting its first biography in English. It is an entertaining book, and a penetrating one, for the story of Verne is also the story of the life and atmosphere of the nineteenth century.

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AERONAUTICS

ELEMENTS OF AERONAUTICS — Francis Pope and Arthur S. Otis—*World Book Co.,* 660 p., $3.40. Written by two practiced aviators, this is a timely text for the air-minded youth of our high schools. It tells everything about airplanes, the art of flying, aerodynamics, air navigation and meteorology that can be understood without abstruse mathematics. It gives also the rules and regulations that all pilots must know.

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GENERAL SCIENCE

CARNEGIE INSTITUTION OF WASHINGTON YEARBOOK No. 40, July 1, 1940-June 30, 1941—*Carnegie Institution of Washington,* 336 p., $1 paper; $1.50 cloth. The annual review of the far-flung activities of this great research institution, still full of important reports of advances, despite the fact that many of its staff are carrying a major burden of war research which cannot be published at this time.

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PHYSICS

IDENTIFICATION OF ABILITY TO APPLY PRINCIPLES OF PHYSICS—William Arlow Kilgore — *Teachers College, Columbia University,* 34 p., $1.60. This book describes a sort of physics intelligence test that was tried out on high school pupils. The test is designed to measure the student's ability to apply physics principles to new stiuations. The question as to whether the method of teaching affected this ability was also investigated. The experimental method was found superior in this regard.

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ENGINEERING

TRAINS IN TRANSITION—Lucius Beebe—*Appleton-Century,* 210 p., illus., $5. This is an account of the transition from the old wooden coach to the modern stream-lined train—profusely illustrated with many beautiful photographs.

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