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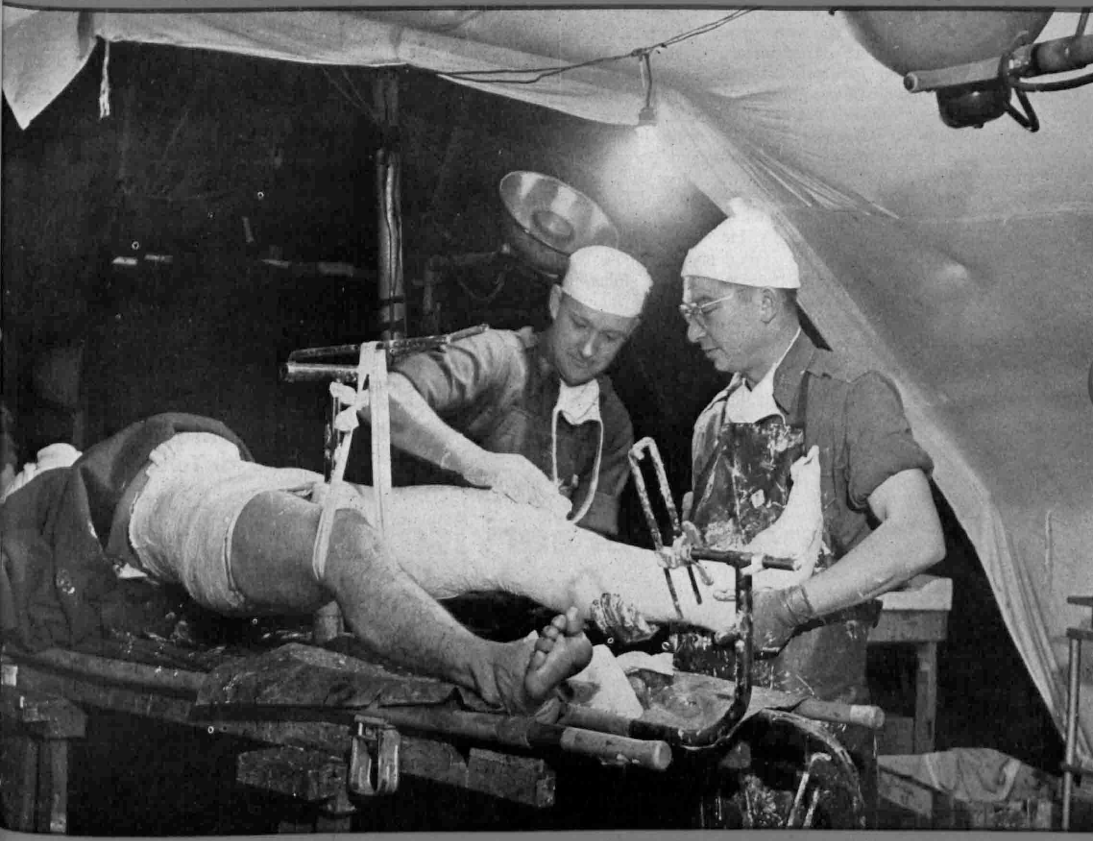
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 4, 1944



Front-Line Surgery

See Page 152

A SCIENCE SERVICE PUBLICATION

PSYCHOLOGY

Neurotics Are Not Insane

Men Army rejects for psychoneurotic reasons can fill civilian jobs well and might make good executives. Usually have above-average intelligence.

➤ PUBLIC CONCERN being voiced over the report that men in "high Government places" are being rejected by the Army as psychoneurotic is due largely to the widespread misunderstanding of what sort of men the Army rejects as neurotic.

The neurotic person, an Army psychiatrist would tell you, is not insane. He is not withdrawn from reality. There are almost as many different kinds of neurotics as there are different kinds of people. But, so far as it is possible to make a group portrait, this is what the neurotic is like:

He is usually somewhat more intelligent than average. He is over-conscientious, diligent, often a slave to duty. He has more imagination than the average man. He is high-strung, full of pep, enthusiastic. He worries a great deal, lies awake nights planning, may have bad dreams about his problems when he does go to sleep. He fatigues quickly, wouldn't be much good on a long cross-country hike. He is likely to cling like a bulldog to a course he knows to be right despite orders from topside. He is subject to indigestion, headaches, stomach ulcers or possibly high blood pressure or heart palpitation.

You know a great many men of this type—men, and women, too. They often make excellent executives, although they may neglect their families in favor of their jobs.

But the Army does not want them. It takes a special kind of tough-mindedness to submit to strict discipline and still to retain initiative; to be able to walk boldly toward death and to kill ruthlessly; to sleep soundly at strange times and in strange places when opportunity offers and to go without sleep for two and three days and nights at a time. Too vivid an imagination is not good for a soldier. He must not lie awake nights thinking about what lies ahead. He must not have his sleep broken by dreams of what he has had to do.

There are important civilian jobs to be done. These men, who cannot be soldiers, may be just the persons to get the home-front jobs done and done excellently.

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PSYCHOLOGY

Why Women Enter Services

Patriotism is chief motive. Desire for personal gain or improvement main secondary reason. Romance and boredom rank low.

➤ PATRIOTISM is the dominating motive leading women to enter the armed services, with desire for personal gain or improvement ranking highest among secondary motives, while desire for romance and boredom with civilian life motivated only a very few, a study of 1,000 consecutive recruits to the U. S. Marine Corps Women's Reserve shows.

The study was reported to the American Orthopsychiatric Association meeting in Chicago by Lt. Comdr. Philip Solomon, M. C., U.S.N.R., Lt. Meyer Brown, M.C., U.S.N.R., and Lt. (j.g.) M. R. Jones, U.S.N.R.

Of the thousand, 87 could give only patriotism as a reason for entering the service. Another 255 gave personal duty, such as representing the family, taking the place of a relative lost in action and vengeance, as additional motives.

Besides the universal motive of patriotism, the largest group, 370, were attracted by the opportunity for personal gain. Many had never had a chance to go to college and expected the service, in effect, to complete their education. Some had specific trades or occupations for which they wished to prepare themselves. Others wanted to gain or lose weight, take advantage of the outdoor life, physical training and similar benefits. A significantly large number were interested in developing their personalities, seeking "poise," "independence," "ability to get along with people" and "self-reliance." Many specifically said they needed to learn to take discipline.

The romantic note was struck by a small group, the 63 that frankly sought the novel and adventurous in the service and spoke of the "glamour" and "appeal."

"The group that is repelled from civil life is made up largely of recruits who have become tired of their jobs, often after years of monotonous service," the psychiatrists reported.

Some unusual reasons were the desire, after the war, to be able "to speak the same language" as the husband in service and to make a father proud.

"Among the significant implications of this study," the psychiatrists pointed out, "it may be seen that large groups of women are intensely eager to take active part in the war effort in a military way. Civilian life is to them a frustrating experience in time of war. Although it is generally recognized that women of this age group are vitally concerned with their physical attributes, too little attention has perhaps been paid to their aspirations for intellectual and personality improvement."

Science News Letter, March 4, 1944

ENGINEERING

Checkerboard Typewriter Invented for Teletypes

➤ A TYPEWRITER that grinds out coded tape for feeding into teletypes and similar sending and reproducing machines has been invented by a Norwegian, Rolf Hofgaard, of Nordstrandshogda near Oslo.

However, instead of punching series of holes into the paper tape it prints neat little blocks of black-and-white rectangles on it, with a different checkerboard arrangement for each letter and character. The patterns are scanned by an "electric eye" mechanism, which translates the patterns into the appropriate arrangement of electrical impulses for wire or radio transmission.

This invention is protected by patent No. 2,337,553. Like all patents vested in the Alien Property Custodian, it may be used by American industries, royalty-free, until the end of the war, when suitable further arrangements will be made with the owners through the agency of the government.

Science News Letter, March 4, 1944

MEDICINE

Surgical "Conveyor"

Assembly line used by Russian Army surgeons for handling soldiers with broken thigh bones delivers patient completely treated every half hour.

➤ RED ARMY surgeons are using a "conveyor" method to speed treatment of wounded soldiers with broken thigh bones. With this method a soldier patient comes off the line every half hour in excellent condition with his wounded leg completely treated and safely encased in a plaster cast.

Details of the method are reported by Dr. Sergei S. Yudin in the *American Review of Soviet Medicine.* (February) Dr. Yudin, internationally known surgeon and director of surgery of the Sklifasovski Institute for Traumatic Diseases in Moscow, is serving as lieutenant colonel in the Medical Corps of the Red Army.

The conveyor method is used at special field hospitals where the wounded with fractured thigh bones are transported as quickly as possible. At these hospitals a "thigh brigade" works simultaneously on three tables equipped with screws for obtaining extension, or traction as American surgeons call it, of the wounded leg.

"At the first table," Dr. Yudin explains, "after spinal anesthesia, three trained medical orderlies apply extension and carefully wash the wounded. This requires half an hour.

"At the second table the surgeon, with an assistant or an able nurse and second nurse passing the instruments, performs the operation. This step also requires half an hour."

The operation consists in cutting the wound wide open regardless of whether or not it is infected, making a large counter-opening for free drainage, sewing the edges of the skin with catgut to the tissues deep within the wound thus turning the wound inside out by the elastic pull of the skin, and application of sulfa drugs.

"At the third table," Dr. Yudin's report continues, "two able nurses put on a plaster cast with one aid who moistens the bandages and rolls out the patterns. Another half hour, including the cutting of the edges and inscriptions on the cast is required.

"So, every patient requires an hour and a half of time, but every half hour one properly operated upon and definitely immobilized patient both for transport and future treatment leaves such a conveyor system. In this way," Dr. Yudin states, "one surgeon with eight aids during a 16-hour work day can pass through 25 to 30 severely wounded with fractures of the thigh.

"During two days such a brigade can duly attend to all fractures of the thigh, knee and hip joint in 1,000 wounded men. If the wounded number not 1,000 but 2,000 it is necessary to have two such brigades.

"These wounded not only receive complete surgical aid, but later they will require only food and the most simple nursing care. More than 90% of the patients so treated will be able to withstand evacuation into the deep rear, quickly and in excellent condition, and half of them will recover from their wounds, with complete consolidation of their fractures (knitting of the broken bones), in the first plaster cast."

Science News Letter, March 4, 1944

METALLURGY

Aluminum from Clay Possible at Low Cost

➤ ALUMINUM may perhaps be produced from clay or other materials than bauxite at a cost that will compete with its manufacture from bauxite, even without substantial income from by-products. This opinion was expressed by F. R. Archibald and C. F. Jackson, scientific consultants of the Ancor Corporation, at the New York meeting of the American Institute of Mining and Metallurgical Engineers.

These experts believe, on the basis of research tests, that there are localities where reserves of the needed raw materials occur in large quantities and of high purity within economical radius for bringing them together. If other economic conditions are satisfactory, production of alumina from materials other than bauxite would be profitable, they stated.

High-alumina clay, limestone and coal are three materials needed in large quantities. Two tons of limestone are required for each ton of clay. Fuels other than coal may be used. A South Carolina kaolin-type clay, as a source of alumina, has been successfully used in a pilot plant demonstration, and a commercial plant is now under construction in that state. Portland cement may be made from by-products.

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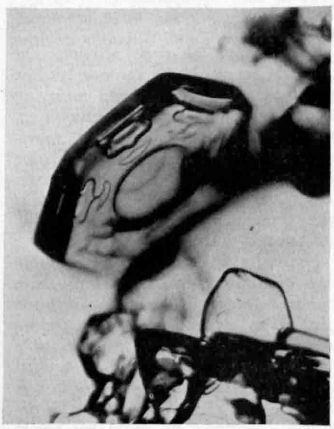
PUBLIC HEALTH

Common Cold Vaccines Fail to Protect Workers

➤ MORE THUMBS are turned down on the "indiscriminate" use in industry of vaccines against the common cold. (*Journal, American Medical Association,* Feb. 26)

The report is by Dr. Lemuel C. McGee of Wilmington, Del.; Dr. J. E. Andes of Morgantown, W. Va.; Dr. C. A. Plume of Succasunna, N. J., and Dr. S. H. Hinton of Parlin, N. J., all of them connected with the medical department of the Hercules Powder Company.

Three cold vaccines to be taken by mouth and two cold vaccines for hypodermic use were given during the October to April seasons of 1941-1942 and 1942-1943 to more than 1,000 industrial and office workers. Careful records were



***WEATHER'S DOUGHNUT**—This is not a hexagonal glass nut, but a snowflake. As this photomicrograph is magnified 106 times, the hole in the center of the flake is only 1/165 of an inch in diameter, about four times the size of an ordinary hair. Such flakes are rarely observed, largely because they are only about a twentieth of the size of the usual flake. Photograph by Vincent J. Schaefer of the General Electric Research Laboratory.*

kept of the number of colds and the number of days lost from work because of colds in these groups and in other groups not receiving the vaccines.

"No evidence of clearly effective prophylaxis against either the frequency or severity (including complications) of the common cold from the use of any of the vaccines studied" was found. The doctors point out that their experience confirms the findings of three other groups of medical scientists.

"The indiscriminate use of cold vaccine now available," they conclude, "is not the answer to the problem of industrial absenteeism due to acute respiratory infections." (*See SNL*, Jan. 29)

Science News Letter, March 4, 1944

PSYCHIATRY

Chicks Get Tics

And bears get tics but human kids get tantrums, is psychiatric parody. Studies show that physical restraint causes destructiveness and bursts of temper.

➤ CHICKS get tics and bears get tics and human kids get temper tantrums.

This parody of a currently popular song is suggested by studies reported by Dr. David M. Levy, of New York, at the Chicago meeting of the American Orthopsychiatric Association.

Unlike the song and the parody on it, however, the studies have serious and probably far-reaching implications for treatment of children with temper tantrums and those whose over-activity and destructiveness make them behavior problems.

Restraint of physical activity, Dr. Levy has found, is the cause of tic-like head-shakes in hens confined to laying cages, of tic-like head movements of bears in cages, of stereotyped movements of other animals as they pace their cages in zoos, and leads to over-activity, destructiveness, inattentiveness with consequent poor learning ability, and temper tantrums of children.

The restraint in the case of children, may even start in the womb three months before birth. Dr. Levy cited one case of an over-active, difficult child whose mother had been confined in a plaster body cast because of a broken back for months before the child was born. He told of another child who destroyed everything he could lay hands on, who attempted to hit the doctor on the head with a hammer, who snatched a lighted cigarette from the doctor's lips and tried to burn him with it. This boy, who at the age of four had been expelled from nursery school, was the child of two artists and lived in a studio where he was constantly under physical restraint to keep him from touching things.

Parents who are not artists, Dr. Levy pointed out, often also subject their children to too much physical restraint by keeping them for long periods in play pens or carriages, or, even worse apparently, by letting them play on a sheet on the floor but pushing them back every time they try to crawl over the edge of the sheet.

The stereotyped movements of some very young babies who rock their heads back and forth for long periods, sometimes humming to themselves at the same time, suggests one remedy or preventive of destructive over-activity as the child grows older. This is to rock the child, walk while holding him and otherwise give him a chance to release the tension built up by restraint. Some individuals, apparently, are born with a greater need for activity than others.

Restraints of the type used to stop thumb-sucking, surprisingly perhaps, do not seem to lead to the destructive over-activity and problem behavior. The reasons, apparently, are that these restraints are not used either long or consistently as a rule, and that they do not restrain locomotion.

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MINERALOGY

Nuisance Mineral in Coal Could Make Sulfuric Acid

➤ GLITTERY golden streaks in some coals are just headaches to fuel engineers. For they are composed of fool's gold, or pyrites, a compound of sulfur that makes a bad smell if chimney smoke reaches human noses, and in any case increases corrosion of any metal that may be exposed to the fumes.

Yet pyrites in coal could be put to work in industry, David R. Mitchell of Pennsylvania State College told the New York meeting of the Society of Economic Geologists and the American Institute of Mining and Metallurgical Engineers. Pyrites are associated with some kinds of coal, not only in streaks but in solid lumps, and can be separated out by means of suitable machinery. Such coal-pile pyrites can be burned, and the resultant sulfur dioxide gas used in preparing sulfuric acid. At present, however, cheaper methods for making sulfuric acid are in use, so that widespread installation of equipment for sorting pyrites out of coal-mine wastes is not anticipated.

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FUZZY-WUZZIES—Native carriers of New Guinea pause long enough on the way back from a battle front for a wounded man to get a light from a member of the Medical Corps. In spite of the fact that it is probably a universal religious belief in New Guinea that death is brought about by ghosts or is the result of sorcery, the frizzy-haired natives seemed to have no fear of death as they helped in the often dangerous job of carrying Allied wounded back from the front lines. Official U. S. Signal Corps photograph.

ANTHROPOLOGY—PSYCHOLOGY

Psychological Gap

➤ BOYS on the fighting fronts in the Pacific area are becoming separated from folks at home by a psychological gap, because they have been through terrific experiences which they feel their people cannot understand, Mrs. Eleanor Roosevelt intimated at a special meeting of the Anthropological Society of Washington, with the Washington Academy of Sciences as a guest society. Something needs to be done, she added, to eliminate this feeling of separation and loneliness on the part of our young men.

Mrs. Roosevelt cited one instance during her Pacific area trip that brought this situation home very strongly. She was being told by a young soldier of the hard fighting in the first weeks of the Solomons campaign. He pictured vividly the deadliness of the jungle, with its heat, mud, insects and absence of any comfort; the malice and trickery of the enemy; the feeling of being forgotten and abandoned when supply ships failed to show up on schedule, while Jap radio propaganda nagged incessantly.

"Did you tell your folks about this in your letters home?" she asked the boy.

"Why no," he answered. "They wouldn't understand. They don't know anything about all this."

Protesting at the outset that she was not going to make a scientific talk, Mrs. Roosevelt nevertheless offered many observations on the peoples, both natives and whites, that she saw on the islands she visited, and on some of the changes that the war is making in their lives.

In New Zealand she found descendants of the white settlers and their erstwhile enemies, the Maoris, working hard side by side at war jobs. The first war-industry plant she visited was a food-packing establishment, staffed by women, both white and Maori, who were putting up lend-lease corned beef hash, American style, for "Yanks" at the front. American troops are very popular in New Zealand, she said, and when one division, which had gone up to the fighting zone from their island, was finally withdrawn to Australia for recuperation and hospitalization of the wounded, the New Zealanders felt they had been cheated.

For the natives on the smaller islands, both Polynesians and Melanesians, Mrs. Roosevelt had high praise. The black, frizzy-haired "Fuzzy-Wuzzies" of New Guinea and the Solomons, rated by some writers as the most primitive of primitives, she found most devoted to their white friends and deliverers. In turn, they brought the wounded out with great gentleness, and with total unconcern for their own safety in the presence of the enemy.

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PUBLIC HEALTH

War Will not Increase TB Deaths in U. S.

➤ A CHEERING prediction has just been made by the editors of the *New England Journal of Medicine.*

"The war years will not show an increase in the mortality of tuberculosis in the United States," they state.

This is in decided contrast to some rather gloomy forebodings that have been expressed. Tuberculosis death rates in the past have always mounted during wars, so that the disease has come to be called "one of the camp followers of war."

The New England medical editors actually are not merely prophesying that the trend will be reversed but giving a vote of confidence to the tuberculosis fighters in this country whose "ability, ingenuity and steadfast qualities," they believe, will be able to save us from a war increase in tuberculosis deaths.

The war has decreased the numbers of these tuberculosis fighters. As early as 1942 a distinct reduction in the personnel of the sanatoriums in this country was reported. At the same time, more and more cases are being uncovered in examinations for induction into the armed forces.

This does not mean that there actually is more tuberculosis in the country, but simply that the amount we have is being more completely recognized. By the end of last year, it is estimated, 25,000 of the millions of young men examined at induction stations had been found to have a disease neither they nor their friends suspected.

Discovering these unsuspected cases should help to reduce the tuberculosis

death rate, since many of these young men will get the disease treated in the early, more readily cured stages. It should also help to reduce the number of new cases, because steps can be taken to protect the families and close contacts of these men which otherwise might not have been taken in time to prevent the spread of the disease.

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GEOLOGY

Search for Oil Continues

War demand for petroleum products causes unprecedented activity on the part of geologists and geophysicists. Hunt for new finding tools.

➤ WAR DEMANDS for petroleum products have made unprecedented demands upon the oil industry, and in 1943 put a monthly average of about 340 geophysical parties in the field in search for new oil reserves. These demands have caused the oil-finders, geologists and geophysicists, to "take stock of the efficiency of their finding-tools," declared Dr. C. A. Heiland of the Colorado School of Mines at the New York meeting of the American Institute of Mining and Metallurgical Engineers. He is also chairman of the Institute's committee on geophysics.

We had in 1943, he said, a total monthly geophysical exploration cost of $2,354,000. Including expenditures for well-logging operations, the total geophysical outlay for the year was over $31,500,000, and this represents only about 12½% of the total exploration effort of the oil industry.

About 60% of the geophysical exploratory activities were in the southern and southeastern states. The Oklahoma-Kansas-Arkansas area received second attention. The principal other explorations were in the western and mountain states.

Geophysical methods are based upon density or gravity observations of subsurface structure and the rate of conductivity of vibrations or electrical impulses through the rock. The two most widely used instruments are the torsion balance and the seismograph.

While half the 500,000,000 barrels of oil discovered in 1942 were located by geophysical efforts, oil is evidently not as readily found by these methods now as it was some twelve years ago, he said, and it has been suggested that different physical and chemical methods take their place. With this he is not in agreement.

"We have a fairly good idea as to the approach to the problem," he stated. "Electrical and geochemical methods have shown promising results. It is generally believed that these methods react to variations in the petrographic and chemical character of near-surface sediments which sometimes are, and as often are not, definite indications of subsurface oil accumulations."

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METALLURGY

No Competition For Steel

➤ ALUMINUM and magnesium will not seriously menace the steel industry after the war, and neither will plastics. Nor will the use of plastics be a hindrance to light-metal developments. This is the opinion of Dr. John M. Weiss, New York industrial chemist, expressed in a report to the American Chemical Society.

The yearly capacity of the steel industry is approximately 100,000,000 tons, the estimated capacity figures for aluminum and magnesium are 1,500,000 tons and 300,000 tons respectively, he states. The production capacity of the light metals is less than 2% of the steel production.

"Competition and new needs may so stimulate the alloy steels as actually to increase production," he said, "and thereby bulwark the steel manufacturers."

The present large uses of aluminum and magnesium are in airplane construction and in incendiary bombs. The latter will disappear with peace and the former will undoubtedly be sharply reduced, he said. New uses for aluminum and magnesium reaching far beyond the transportation field will be necessary if the plants are to continue to operate at capacity.

Synthetic plastics capacity represents only about 15% of the projected light-metal capacity, he estimated.

"Many uses of plastics, notably the protective coating field, are not competitive with the light metals. Likewise, the transparent and colored specialty products do not fall into the competitive class, so that the impact on metal is even less than the tonnage figures indicate," is Dr. Weiss' conclusion.

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ELECTRONICS

Two-way Electronic Phone System Installed in Trains

➤ A TWO-WAY electronic train telephone system which permits freight conductors and engineers to talk with each other or with block operators is now in operation on the 67-mile Belvidere-Delaware branch of the Pennsylvania Railroad, running northward from Trenton.

This unique system, the first to be established up to the present time, will be used on freight trains only until more thoroughly tested. Installation of the necessary equipment has been made on ten locomotives and in ten cabin cars. It has also been made in one block station, at Frenchtown, N. J., 30 miles north of Trenton, and is under way in another block station located in Trenton.

High-frequency alternating currents are used in the new system. They are transmitted along the rails, and also along wires on poles parallel to the track. They are termed "carrier" currents. They have impressed upon them the impulses of the telephone currents produced by talking into the telephone instruments. These electrical impulses are transformed back into sound by the receiving sets in the locomotives, cabs or block station.

The system will be used at present for operation purposes only. Train crews will be able to report to block station operators and to get orders from them. Conductors and engineers will be able to talk to each other at will, and also to communicate with other trains within several miles' distance.

This new train communication system was produced in collaboration with the Union Switch and Signal Company, following several years of intensive experimentation and development. Further installations are planned after this first has been given a thorough trial in practical operation.

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PSYCHIATRY

Problem Boy Good Soldier

Of 160 misfits in civilian life, 40% have either received promotions or special assignments or been decorated for bravery, psychiatrists find.

➤ THE TOTALLY unexpected finding that problem boys can make good in the armed services, many of them covering themselves with distinction, was reported by Dr. Louis A. Lurie and Florence M. Rosenthal, of the Child Guidance Home, Cincinnati, at the Chicago meeting of the American Orthopsychiatric Association.

Reports from all over the country of an alarming increase in juvenile delinquency because of the war led Dr. Lurie to investigate another side of the picture, the effect of the war on those who had been problem children and delinquents long before we entered the war.

Dr. Lurie knew that about one-third of all casualties returned from overseas were neuropsychiatric casualties, in spite of the fact that up to April, 1943, about half a million men had been rejected for psychiatric reasons, in the effort to screen out of the armed forces men likely to break in service. So he expected to find that the problem boys would make a poor showing. Instead, here is what his study revealed about the military history of 160 problem boys who had at one time been under observation at the Child Guidance Home and who months or years later enlisted or were drafted into the armed forces:

One hundred and five of them are still in service, one has been killed in action, seven have been honorably discharged, only three have been dishonorably discharged. Very striking is the fact that 46 of them, or 40% of the entire group, have either received promotions, special assignments or have been decorated for bravery.

One boy became a sergeant in the Air Forces, won the Distinguished Flying Cross, silver star with seven ribbons and oak leaf cluster. Up to the beginning of this year he has been credited with shooting down more than 25 Japanese planes. Yet this boy at the age of 16 had been referred to the Child Guidance Home after arrest for carrying concealed weapons and truancy. He tried to give a hard-boiled impression but admitted that he was very fearful, that he drank to "build himself up" and carried concealed weapons for the same reason. He has adjusted so well, Dr. Lurie believes, because in the abnormal situation of war his abnormal behavior is accepted. Carrying a weapon is no longer wrong, but the boy is actually given a weapon and taught to use it to kill.

It would be a mistake, Dr. Lurie emphasized, to conclude from the histories of these boys that the Army and Navy "offer a refuge to the misfit, and make men out of inadequate personalities." There were, for example, more than three times as many promotions, citations for meritorious service and decorations for bravery among those of the problem boys who had become adjusted to civil life before induction as among those still unadjusted.

Only after the war, when the boys have again returned to civil life, will it be possible, he said, to learn what effect the war and military service has had on them and to gain from this knowledge truer understanding of the ability of a person to adjust himself to such a fundamentally abnormal situation as war for which habitual patterns of behavior are very frequently inadequate.

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***LEATHERNECK PLANE**—Shown here in flight is the new A-25 Helldiver attack-bomber which the Curtiss-Wright Corporation announces it is delivering to the U. S. Marine Air Corps. Equipped for skip, glide and dive bombing, it carries its main bomb load within its fuselage but can accommodate additional bombs under its wings. Four fixed machine guns are mounted in its wings for strafing the enemy, and another gun, easily discernible in the picture, is installed in the rear cockpit turret. This plane is a close counterpart to the U. S. Navy's Helldiver dive bomber. (See SNL, Jan. 15)*

MEDICINE

Army Surgeon Receives Academy's Gold Medal

➤ THE GOLD MEDAL of the American Academy of Orthopedic Surgeons has been awarded to Col. John L. Gallagher, M.C., A.U.S., for his development of compression dressings for burns, wounds and frostbite.

These dressings, because of the pressure they exert, can stop hemorrhage, thus eliminating the use of the tourniquet and proving effective in wounds where a tourniquet cannot be used. In burns, they not only protect against germs but because of the pressure help to prevent plasma from escaping into the tissues.

The dressings are so easy to apply that they can be put on in the dark by persons with very little training. Added advantages are economy of space in shipment and economy and saving of strategic materials, since they are made of mechanics' waste with a minimum of gauze.

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SEISMOLOGY

Undiscourageable Chinese Build Own Seismograph

➤ CHINESE scientists, like Chinese soldiers, simply won't stay licked. A letter just received by Science Service, from S. P. Lee of the National Geological Survey of China, tells how he and his associates have built themselves a seismograph, to replace an instrument wrecked by the Japs at Peiping, and are now using it in the study of earthquakes. The new observatory has been set up at Pehpei, near Chungking, and has been continuously in operation since last October.

Constructing a seismograph is a task to tax the abilities of scientists with far greater technical resources at their disposal than can be expected to be available in the emergency capital of an invaded land. It involves the balancing of a heavy weight (in the present instance more than 200 pounds) on a long pendulum, with more than watch-like accuracy, and equipping it with means for magnifying and recording the pendulum's imperceptible swings when a distant earthquake sends slight tremors through the earth, like ripples in a pond.

With his letter, Mr. Lee sent a detailed tabulated list of a dozen earthquakes that have been recorded on his instrument from Oct. 22 to Nov. 26, giving full technical data. These are to be correlated with similar data picked up by seismograph stations in this country. The Nov. 26 earthquake was the destructive shock that caused major damage and loss of life in Turkey on that date.

Seismologists of the U. S. Coast and Geodetic Survey expressed high admiration for the enterprise and resourcefulness of Mr. Lee and his co-workers in setting up so good an instrument and operating it so successfully under such difficult conditions.

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PSYCHIATRY

12 Points Characterize Accident-Prone Person

➤ SUGGESTIONS to doctors examining men for the armed forces or for industrial jobs on how to detect the accident-prone person are given by Dr. Flanders Dunbar, New York psychiatrist. (*War Medicine*)

Accident-prone people, she states, "can make the kind of mistake that sinks a ship, loses a battle or explodes a munitions plant. And apart from its consequences, the mistake will appear to be just the kind of unfortunate mistake that anyone might make. But, nevertheless, there is evidence that only certain types of people make such mistakes."

A history of having had many accidents, some of them serious, is of course the first thing to look for in detecting persons with the accident habit. In addition, Dr. Dunbar finds the following 12 points characteristic of the accident-prone person:

1. Far better than average health, with no tendency to colds, indigestion, stomach ulcers or other of what Dr. Dunbar calls "vegetative disturbances."
2. Impulsiveness of action under stress.
3. Failure to finish school.
4. Frequent change of jobs and many ups and downs in income.
5. Spontaneous and casual in social relations.
6. Apparently gets along well with members of the opposite sex, but irresponsible toward husband or wife and family.
7. Interest in machinery, sports and gambling.
8. No interest in philosophy beyond "a firm belief in fate."
9. Makes up mind quickly.
10. Coffee, alcohol or cigarets used to "let off steam," not for sociability or to increase alertness and prolong working time.
11. Frequent conflicts with authority. Attempts to deal with these by "being nice." Ignores existence of authority as long as possible.
12. History of broken homes—his parents' or his own.

Science News Letter, March 4, 1944

CHEMISTRY

Organic Chemistry Leader Awarded Gibbs Medal

➤ NOTED for bringing leadership in organic chemistry from Germany to the United States, Dr. George O. Curme, Jr., vice president and director of research of Carbide and Carbon Chemicals Corporation, New York, has been awarded the 1944 Willard Gibbs Medal.

Dr. Curme, more than any other individual, is responsible for the outstanding advances his company has made in the field of aliphatic chemistry. The award, one of the highest distinctions in chemical science, is given annually by the Chicago section of the American Chemical Society in recognition of eminent work in, and original contributions to, pure and applied chemistry.

Science News Letter, March 4, 1944

IN SCIEN

HORTICULTURE

Coal Ashes Recommended For Rooting Plant Shoots

➤ ANTHRACITE coal ashes are an excellent material in which to set plant cuttings, while they are striking root, states Miss Mildred P. Mauldin of the San Antonio seed-testing laboratory of the U. S. Soil Conservation Service (*Science,* Feb. 18).

Sifted hard coal ashes were used on a large scale for this purpose by her father, who for many years operated a wholesale cut-flower business in New York. Cuttings thus rooted were exceptionally free from diseases, especially from damping-off, a fungus plague that sometimes wipes out whole benchfuls of young plants. The ash-rooted cuttings, Miss Mauldin adds, produced large clumps of roots and carried throughout their lives much of the vigor with which they started.

Science News Letter, March 4, 1944

MEDICINE

Front-Line Surgery Reduces Soldier Deaths

See Front Cover

➤ THE GREAT reduction in the death rate among men wounded in battle—from 7.4 per cent in World War I to less than 3 per cent in this war—is partly due to the work of the organized teams of skilled surgeons, trained technicians and surgical nurses, called the Auxiliary Surgical Groups, which are located in every theater of operations where American soldiers are fighting.

The members of these teams must be ready at all times to go by the fastest transportation available, whether it be jeep, truck, supply vehicle or plane, to anywhere in a battle area where wounded men may need immediate special attention.

The picture on the cover of this SCIENCE NEWS LETTER, an official U. S. Army Signal Corps photograph made at an evacuation hospital near Riardo, Italy, shows a medical officer applying a cast on the leg of a soldier who has a deep wound in his thigh caused by a shell fragment.

Science News Letter, March 4, 1944

E FIELDS

ENGINEERING

Simplified Folding House Requires No Tools

➤ A SMALL folding house that requires no tools at all to erect or dismantle is the contribution of Jacob Fuehrer of Moodus, Conn., on which he has received patent No. 2,342,264. The structure is rectangular in plan, with side and end walls hinged to the floor. Raised into place, the building elements are secured by a girder hooking into notches in the top edges of the ends. Hook rods swing out from the side walls to engage eyes along this girder; they can be tightened to brace the structure securely. Roof and gable ends, also hinged, are set on top. This utilitarian building is intended strictly for temporary uses and ready portability.

Science News Letter, March 4, 1944

PUBLIC HEALTH

Do's and Don'ts Given For Treating Minor Burns

➤ DO'S AND DON'TS in the treatment of minor burns were presented by Dr. Roy D. McClure and Dr. Conrad Lam of Detroit at the Chicago Congress of Industrial Health sponsored by the the American Medical Association. Although intended primarily for industrial physicians, the directions will be useful for small burns acquired in cooking, ironing and other domestic activities.

First thing to do, the Detroit doctors say, is to wash the burned part if it is dirty, using white soap and water but being careful not to wash raw areas.

Second, do not break blisters or otherwise "debride" the burn.

Third, cover the burn with a piece of fine mesh gauze impregnated with petrolatum or boric ointment. If you do not have this specially treated gauze, put the petrolatum or boric ointment directly on the burn and cover with gauze.

Four, apply a dressing large enough to keep out the dirt and maintain some pressure.

Five, change only the outer dressing as necessary.

Six, for more severe burns of the hand, apply more pressure with cotton waste.

Severe burns, of course, should be treated by a doctor.

Here are the don'ts of treating minor burns:

One, don't use tannic acid solution or jelly, it retards healing.

Two, don't use unproved but much advertised and expensive proprietary preparations.

Three, don't use a sulfa drug preparation. They do not prevent infection and may cause a rash.

Four, don't break the blister. The plasma in the blister is an ideal dressing.

Five, don't delay skin grafting if indicated for small third degree burns.

Science News Letter, March 4, 1944

ORDNANCE

Sea Can Be Gilded To Mark Enemy Submarine

➤ PALE gold-bronze patches floating on the sea may mark the spot where a submarine was last seen, so that when the destroyers come boiling up they'll know where to drop their depth charges. This is only one of the possible uses of a marking bomb made of pressed paper-pulp and containing bronze powder, fluorescing compounds or other materials conspicuous on the water, on which patent No. 2,338,719 was granted to Lt. Comdr. Pliny G. Holt, now stationed at Philadelphia.

The idea is for "look-see" planes to drop these marking bombs on water or other unsubstantial surfaces, like snow or thin ice, so that heavier air or surface craft following will be able to get into action more quickly and effectively. The spots can also be used as targets in bombing practice.

Science News Letter, March 4, 1944

GEOLOGY

Arizona Big Producer Of Many War Metals

➤ ARIZONA produced in 1943 more copper, lead and zinc than ever before, Dr. Eldred D. Wilson of the University of Arizona stated before the New York meeting of the Society of Economic Geologists and the American Institute of Mining and Metallurgical Engineers. Of the 10 properties that turn out 99% of the state's yield of copper, three are open pit mines with a total combined capacity of more than 75,000 tons a day. Six of the nine active zinc mines are relative newcomers to the field; most of the zinc mines are also producers of lead. Gold and silver are by-products of the copper mines.

Science News Letter, March 4, 1944

MEDICINE

Less Maternal Blood Lost With New Anesthesia

➤ LESS BLOOD LOSS with consequent saving of the mother's vitality is a too little emphasized advantage of the new method of making childbirth painless, called continuous caudal analgesia, Dr. Norris W. Vaux, professor of obstetrics at Jefferson Medical College, Philadelphia, and Dr. Robert M. Mitchell, of the U. S. Public Health Service, declare. (*Journal, American Medical Association,* Feb. 26)

None of their 1,000 patients under caudal analgesia lost as much as 501 cubic centimeters (about one pint) of blood, as compared with 28 out of 1,000 mothers delivered under inhalation anesthesia who lost that much or more blood during the third stage of labor. Almost all the mothers (97.4%) in the caudal analgesia group lost between none and nine ounces of blood, compared with 79.1% of mothers under inhalation anesthesia.

The third stage of labor, during which the after-birth is expelled, is also much shorter with caudal analgesia. In only two cases, compared with 17 cases under inhalation anesthesia, did it last longer than 31 minutes.

The Philadelphia doctors believe caudal analgesia enables the uterus to "approach its normal mechanism more closely."

Science News Letter, March 4, 1944

GEOLOGY

U. S. Has More Chromite Than Was First Suspected

➤ CHROMIUM, needed for alloy steels and in compounds as paint pigment, tanning material and for other industrial purposes, has been a critical war material. Part of the importance of Turkey as an uneasy neutral has been due to her possession of great chromite deposits which both Axis and Allies want.

The United States has greater wealth in chromite than we have suspected, and now we are beginning to make use of it. At the New York meeting of the Society of Economic Geologists and the American Institute of Mining and Metallurgical Engineers, Paul T. Allsman and E. W. Newman of the U. S. Bureau of Mines told of the opening of a five-million-ton ore body, in Montana. Two mines have tapped the big deposit, and are equipped to mine and mill 500 tons and 2,000 tons daily, respectively.

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HORTICULTURE

Seed-Catalog Gardening

The family Victory Gardeners should get together now on plans for this year's planting. New tried and tested vegetable varieties should be included.

By DR. FRANK THONE

➤ VICTORY in battle is usually the result of plans and arrangements made long in advance, during periods of seeming inactivity. The first landings in North Africa were made in November, 1942, but every step in the proceedings had been blue-printed in advance during the preceding summer and spring.

Victory Gardens, which will be called upon again this year to make their contribution to the nation's total war effort, must be planted in their planners' minds, and should be carefully laid out on paper as well, in the period of enforced inactivity during the first chill days of early spring before either spade or seed can profitably be thrust into the ground. "Seed-catalog gardening" sometimes draws smiles, but really it is the staff work that is necessary for fully successful results.

Especially important in planning are decisions regarding materiel. Looking at his maps and memoranda, the general must make up his mind whether a certain enemy's strong point calls for attack by 105-millimeter howitzers, or "Long Tom" rifles, or maybe a charge by General Sherman tanks. Similarly the home gardener, his mind on the vegetables needed to supply, say, vitamin A, must make up his mind whether to plant carrots, or string beans, or Swiss chard, or maybe all three.

General staff work for the benefit of the Victory Gardener is constantly being carried on by scientists in the various state agricultural experiment stations and in the U. S. Department of Agriculture. A postcard request to your own state experiment station will quickly bring bulletins giving information about vegetable varieties best suited to the particular set-up of soil and climate with which you have to work.

For an over-all campaign manual, the Department of Agriculture has issued recently a new bulletin, designated as Miscellaneous Publication No. 538. Prepeeks at some of its specific recommendations are decidedly worth while, for they are designed to aid the gardener in getting maximum returns out of his commitments in space, labor and money spent for tools and fertilizer.

Many of the vegetable varieties recommended are new; but they are not too new. Some really remarkable things are on the way and have been well tested, but because it takes time to multiply the seed stocks to the bulk needed for general distribution, these must await the Victory Gardens of 1945 or 1946. Here are some of the new-but-tested vegetables of which seeds can be obtained now:

Tomatoes Lead the List

Tomatoes. Plant Marglobe or Rutgers for main crop, average-climate conditions. If wilt is a serious tomato disease in your neighborhood, plant Pan America instead; it is highly resistant. In the northernmost states where the season is short, quick-growing varieties like Bounty, Victor, Firesteel and Bison are recommended.

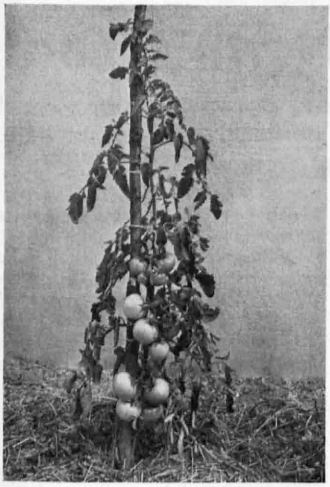
Tomatoes are, and should be, the Number One vegetable in all Victory Gardens. If you have only a score of square feet of space, and can grow only one crop, tomatoes are what you should set out.

In the small garden, tomato plants should be kept trimmed back to one stem, with that stem tied to a stake. You can multiply the yield from a limited footage in that way. And when the summer drought comes on, keep your plants well watered. They'll be grateful, and will repay you.

Bush Beans for Small Space

Beans. If you haven't much space, bush beans will be better for your purposes than pole beans, which require more elbow-room. Since established varieties like Tendergreen, Bountiful and Burpee Stringless seem to be pretty satisfactory green-podded beans, and Improved Golden Wax and Brittle Wax among the yellow varieties, no very new ones are offered. However, there are a few recent comers especially adapted for growing in the hotter summers of the South: U. S. No. 5 Refugee, and Florida White, Ashley and Cooper among the wax beans.

ORIENTAL—Chinese cabbage, a variety of which is pictured above, has not been grown in American Victory Gardens as much as it might be. One of its advantages is that it does not have to be set out as individual plants; the seedlings can be thinned out after they have got a start.



NUMBER ONE VEGETABLE—If you plant only one crop in your Victory Garden, that crop should be tomatoes. A good variety to grow is the Marglobe tomato, a plant of which is shown here.

Soybeans, despite their recent wide acceptance as ingredients of processed foods, have yet to win their deserved place as garden vegetables.

Soybeans are not eaten pods and all, like snap beans, but are shelled like limas or peas. They are somewhat more difficult to shell; it is a good idea to soak them in very hot water for five minutes first, to loosen the pods. A variety especially recommended by the New Jersey Experiment Station for table use is Bansei.

Cabbage. Although it requires a good deal of space per head, cabbage is considered worthwhile for even small gardens because it is an unusually good source for vitamin C, and because of the high nutritional value of its fermented product, sauerkraut. Favorites for early harvesting are varieties of the Wakefield type, with pointed heads; an excellent early round-headed variety is Golden Acre. A little later, Glory of Enkhuizen is excellent. For main and late harvesting, the Flat Dutch and Danish Ballhead types are preferred.

Chinese cabbage, which is a true member of the cabbage tribe despite the fact that it does not form heads, deserves more attention than it is getting from American home gardeners. For one thing, it has the advantage of not needing to be set out as individual plants; the seed can be drilled directly into the soil and the seedlings thinned in the row after they have got started. Of the many Chinese varieties, only a few are thus far established in this country, and they still go under their Oriental names: Pe-Tsai, Chihli, Wong Bok, Cheefoo.

Carrots Good to Plant

Carrots. Of all root vegetables, carrots lead the list. The stuff that makes them yellow, carotene, is found in practically all green and yellow vegetables and is the chemical foundation for vitamin A. Even the smallest garden, therefore, should have a few rows of carrots. Recommended varieties, in addition to the old favorite, Danvers Half Long, are Red Core Chantenay and Nantes.

Corn. Sweetcorn is not usually recommended for small vegetable gardens because it takes up so much room, but the enthusiasm of its devotees is so great that if there is any space to spare at all, at least a few hills are likely to be planted.

About a generation ago, Golden Bantam was the latest novelty; since then, many hybrid varieties have been originated that combine its attractive color, earliness and tenderness with larger yields. A few of these are: Ioana, Golden Cross Bantam, Maine Bantam P39, Whipcross P39.

Greens. Despite the traditional prejudice of small boys against spinach, this leafy vegetable is still grown in quantities. Some nutritionists, however, claim that other leaves yield better vitamin values in a "mess o' greens." Notable among them are beet tops (really the most valuable part of that vegetable) and chard. Chard is a close relative of the beet, but lacks the fleshy root. Turnips, pulled up young and cooked roots, tops and all, are a favorite form of greens in the South.

Yellow-Fleshed Turnips

Turnips. Recent research has shown the once-despised turnip to be an unusually good source of vitamin C, rating close to cabbage in that respect. However, you might as well get an extra vitamin while you are at it if you can, and yellow-fleshed turnips yield vitamin A as well as C. Golden Ball is a recommended yellow variety. Turnip's big cousin, rutabaga, is also a highly valuable member of the yellow vegetable group.

Salad Vegetables. It is to be taken for granted that everybody who plants a garden will put in at least a little of each of the early spring triad; radishes, lettuce, green onions. Recommendations here can be only of the most general kind.

The little round red radishes give the quickest crop, but the long white ones hold out better against pithiness. Besides, they don't have to be peeled. Don't attempt head lettuce; results are almost certain to be disappointing. Cos lettuce, or romaine, is just about the best of the leafy sorts. Green onions, from sets, are fine; but unless you have durable knees and a sunburn-proof neck, don't try to grow main-crop onions from seed—weeding them is a deadly job.

Et Cetera

Et cetera. A lot of things are fine to have, but require more than the average amateur's skill (and patience) to bring off successfully. Such, for example, are asparagus, celery, cauliflower, broccoli, eggplant.

Other vegetables are not particularly difficult to grow, but require so much room that unless you reckon your garden in acres (or at least a respectable fraction of an acre) it hardly pays to tackle them. In this class are potatoes, sweet potatoes, peas, and all the cucurbits —cucumbers, melons, squashes and pumpkins.

A last word: If you have only a little ground, you'll probably have it packed to the limit by the time you have a minimum list of vegetables planned for. But if there happen to be a few square feet left, the best thing to do with them is to put in another tomato plant.

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Do You Know?

The skeletons of *sharks* are of cartilage instead of bone.

Rayon is the second ranking *fiber* among textiles, cotton still leads; over 600,000,000 pounds of rayon was consumed in 1943.

A *gorilla* in the San Diego zoo weighing 638 pounds was the largest in America; the second largest, in the Lincoln Park zoo in Chicago, weighs 515 pounds.

The use of *black walnut* lumber is restricted by the government because it is needed for gunstocks; black walnut unsuitable for gunstocks may be released for other uses.

Desert area on the coast of the Red sea south of the Suez canal is said to be rich in gold, emeralds, lead, manganese, copper, iron phosphates, and petroleum; Egypt is now planning post-war developments.

Most common mistakes made by *Victory Gardeners* last summer were attempted use of unsuitable soil, trying to grow crops not suited for small gardens, unscientific use of insecticides, and accepting poor advice.

Enrollment in public *high schools* of the United States is approximately 5,761,000 at the present time, 6.2% less than last year and nearly a million less than in 1940-41; the male decrease is twice as great as the female.

One hundred thousand cuttings of *derris,* from which the powerful insecticide rotenone is derived, have been planted in Haiti to produce this material which is much needed in the United States for insect control.

The *spectrograph,* which provides a rapid method now much used for analyzing minerals, ores, liquids and gases, was suggested for this purpose by Kirchhoff and Bunsen in 1860; little use was made of the suggestion until 1920.

The principal causes of major *fires* are, in the order named: smoking and matches, electrical defects, sparks on roofs, defective chimneys, rubbish and spontaneous ignition, defective heating equipment, lightning, and flammable liquids.

NUTRITION

Rationing in North China

Young children frequently disregarded, and school children and persons over 60 portioned food at half rate. Failed to provide for needs of workers.

➤ RATIONING in North China frequently disregarded young children, and counted small school children and persons over 60 at half rate, Dr. Martha M. Kramer and Dr. Clara Nutting, recently returned from China, report. (*Journal of Home Economics,* February). It also failed to provide for the real needs of active workers, they state.

Food, always a major problem in North China, has been rationed, but the issues of food were irregular, they report after talking with many North China doctors and nurses, fellow-passengers aboard the *Gripsholm.* Provisions were sold in mixed lots so that a quantity of high-priced but frozen potatoes or inferior, gritty meal had to be bought along with rice or flour.

The frighening food shortages, affecting particularly the necessary grains and legumes, Dr. Kramer and Dr. Nutting believe are due to a number of causes. The rainfall in 1942 was abnormally low, and the total area cultivated had been reduced. Labor shortages developed because workmen were drafted for military projects or "removed" elsewhere. Grain shipments from the north and east were cut off. Military requisitioning of foods and paralyzing meat regulations also conspired to make the shortages more critical.

"The winter of 1942-43 was more than usually ruthless," the authors report, "for people had not their customary resistance. Coolies, particularly rickshа-pullers, collapsed in their tracks and died almost at once. They showed no marked symptoms of deficiency diseases, but their diet had likely been so inadequate in almost every respect that they were too weakened for the demands of the job."

Deficiency diseases such as scurvy and eye disturbances began to appear as early as 1941. Patients with peripheral nerve disturbances, never before prevalent, increased in number. This was most likely an early sign of thiamin shortage.

Many cases of apparent riboflavin deficiency among farmers were reported. The subjects, however, improved after eating quantities of peanuts. These men were accustomed to a diet made up largely of mixed soybean and corn meals, but the mixture probably contained far less than the usual 20% of soybean.

The Chinese diet consists mostly of foods of plant origin. Meat has always been relatively expensive and not thought necessary for its nutritive value. Even in normal times the fat content of North China diet was low, fats of plant origin like peanut oil, hemp oil or cottonseed oil being much valued for seasoning. Cooking time has always been important because of the relative scarcity of fuels.

"There will be a painful period of adjustment of food supplies in an impoverished and weakened nation," Dr. Kramer and Dr. Nutting predict for the post-war era. "Education in food selection and in improved methods of food production and handling can play a part without too drastic changes in age-old food habits and the agricultural economy. Science and education may help to develop a food situation much better than in the 'good old days'."

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MEDICINE

Standards For Penicillin

➤ STANDARDS for potency and safety of penicillin will soon get legal status, via the *U. S. Pharmacopoeia,* it appears from a statement issued by E. Fullerton Cook, general chairman of the U. S. P. Committee of Revision.

Tentative but unofficial standards have been prepared through the cooperation of penicillin manufacturers, the Army, Navy, National Research Council and War Production Board. At present these tentative standards and methods of testing are being used by the U. S. Food, Drug and Cosmetic Administra-

tion in checking all production of penicillin manufactured in this country. The U.S.P. Committee of Revision, it is expected, will be asked in the near future, and will act as rapidly as possible, to include penicillin with other drugs and medicines for which it sets standards and gives official status.

Many new sulfa drugs, including those for hypodermic injection and for use in treating dysentery, and the "important medicinal zinc peroxide for wound treatment," as well as many vitamin combinations, will have official status even sooner through inclusion in the first U.S.P. bound supplement.

Getting right into the family medicine chest are two other features of this supplement to the *Pharmacopoeia*. Adhesive absorbent gauze, which covers the ready-made gauze and adhesive tape finger dressings used for small cuts and scratches, is one. If the gauze pad is colored and the color is not a germicidal or bacteriostatic chemical, the *Pharmacopoeia* provides that the label on each pad must show that it is not antiseptic. If the color is germicidal or bacteriostatic, the label must give the name of the chemical.

Capsules and tablets containing more than one vitamin have the quantity of their ingredients reduced one-half in the new standards. This applies to those bearing the official titles Hexyvitamin Capsules and Tablets, and Triasyn B Capsules and Tablets. This strength provides one-half the daily requirements recommended by the National Research Council and is "frequently adequate as a supplement to the normal food intake. This potency," the Revision Committee states, "is also the strength used by the Army and Navy and enables the physician to prescribe as many units as the patient may require."

Racemic menthol, a war substitute, may get U.S.P. recognition in the future if the promised production from turpentine becomes a fact and satisfactory tests are established.

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GEOLOGY

Mercury Supply Increased

➤ THE SUPPLY of mercury has been increased from critical uncertainty to more than sufficient for essential demands, McHenry Mosier of the U. S. Bureau of Mines told the joint New York meeting of the Society of Economic Geologists and the American Institute of Mining and Metallurgical Engineers. High prices for mercury, Government loans to operators, and research carried on by the Bureau of Mines have all contributed to this increased U. S. production.

Since government stocks are now adequate, domestic production is gradually being curtailed through government control of labor and operating supplies, he stated. The present rate of production would amount to about 50,000 flasks of mercury being produced each year.

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Alaska's Mineral Riches

➤ ALASKA'S known mineral wealth is immense; it is suspected that the riches yet to be discovered are still greater. Under the spur of war needs, diligent surveys are now under way, Dr. John C. Reed of the U. S. Geological Survey stated.

During the past year, 39 field geologists worked in the great territory, under the direction of five supervisors, each experienced in the region under his direction. Activities included the study of deposits of molybdenum, zinc, iron, copper, chromium, nickel, quartz crystals, coal, tungsten, asbestos, graphite, tin and mercury.

Science News Letter, March 4, 1944

Iron Ore Reserves

➤ LARGER iron ore deposits have been found to exist in the West than were formerly known. It is now believed that our local reserves will be sufficient to supply for the duration the iron and steel furnaces with this important ore.

Deposits containing more than 150,000,000 tons of iron ore, vitally needed for war production, have been charted by the U. S. Geological Survey, this work in some instances being supplemented by core drilling by the U. S. Bureau of Mines, Dr. Charles F. Park, Jr., and Ernest F. Burchard of the U. S. Geological Survey reported to members of the Society of Economic Geologists and the American Institute of Mining and Metallurgical Engineers, meeting jointly in New York.

The largest of these deposits were found in California and Utah. Because of the remoteness of transportation facilities and water supplies, not all of this ore is immediately available. These local disadvantages, however, can be overcome should the need for the ore become greater.

Science News Letter, March 4, 1944

ENGINEERING

Patented Solar Heater Can Also Work in Reverse

➤ WITH DISCUSSION of the pattern of life in post-war America very much in the air, and with questions of housing well to the fore in those plans, it is perhaps appropriate that inventions having to do with housing should be prominent among patents which have been recently issued by the U. S. Patent Office.

Of particular interest is a solar heating system that can also be used for cooling the house in which it is installed, offered by Alwin B. Newton of Minneapolis, for patent No. 2,342,211. The inventor has assigned his patent rights to the Minneapolis Honeywell Regulator Company.

Solar energy is captured for the system by means of a coil of pipe lying flat on the roof, within a glass-covered insulating case. The heated water or other liquid in the coil is circulated to a

tank in the attic, which thus serves as a heat storer. This much is fairly familiar; heating systems of this kind have been built in moderately large numbers, especially in Florida and the Southwest.

However, the inventor also arranges for reverse operation, to obtain cooling effect. Water from the thermal storage tank is sent through the roof coil at night, whence the heat is radiated into space. To augment the heat-storing capacity of the tank, containers of a substance known as Wood's metal, that melts at 130 degrees Fahrenheit, are placed in it. Similar containers, holding substances that freeze at 50 degrees, augment the cold-storing capacity. The system is equipped with the necessary thermostats and timing devices to adapt its operation to household needs.

Science News Letter, March 4, 1944

BOTANY

NATURE RAMBLINGS by Frank Thone

Fur-Bearing Wildflowers

➤ WILDFLOWERS that venture into bloom during the chill and windy weeks of March come forth wearing furs, to a really astonishing extent. This holds not only for that classic and conspicuous example, the pussy-willows, but also for such early adventurers as trailing arbutus, hepatica, wild ginger, several species of anemone, and those little plants that delight children under the names of pussy's-toes and Indian tobacco. Some of them are hairy all over—stems, leaves, flowers and all. Others are furred to their chins, so to speak, but do have smooth-petaled blossoms.

Why this hairiness in early spring plants? We know, of course, that the plants are not kept warm thereby, despite the appealing fancies of kindergarten rhymes about pussy-willows. As a matter of fact, nobody knows for certain what plant hairs do for plants. However, since this character is especially highly developed in many desert species it seems reasonable to suppose that it helps in some way to keep down the evaporation rate. Its role in the earliest spring plants may be similar.

But the early spring plants we are talking about are not growing in the desert. Frequently the soil around their roots is actually muddy from melted snow and the first spring rains. True enough; but that isn't the whole of the story. Soil temperatures, even near the surface, are often so low during the first weeks of spring that the chilled roots may be taking in very little of the abundance of moisture about them. Or they may be admitting water only during the warmer part of the day. In the meantime, evaporation goes on as long as the wind blows—and in March and the first days of April the wind blows day and night. So it is at least a possibility that even humid-region plants have their heads in a physiological desert during early spring.

Just a little later in spring, from mid-April until the trees develop a closed canopy of foliage, but after the soil has had a chance to warm up a bit and the drying winds have abated, there is another and quite different similarity between the floras of western deserts and eastern woodlands. This is the time of spring wildflowers as we usually think of them—of violets and buttercups, spring beauties and dogtooth violets, star-grasses and shooting-stars and ground orchids. The interesting thing here is that after the spring rains that sweep across our semi-arid Southwest, the same kinds of flowers appear in brief but glowing beauty amid the harsh stems of the chaparral and the startled-looking yuccas and cacti.

Science News Letter, March 4, 1944

MEDICINE

New Research Foundation Established by Publisher

➤ ESTABLISHMENT of a new scientific research foundation, with very broad purposes, is announced by the Williams and Wilkins Company, publishers of medical and other scientific books and periodicals.

It is named the Passano Foundation, for E. B. Passano, who has been actively identified with the development of scientific publishing for over 35 years. Dr. Emil Novak, associate in gynecology in the Johns Hopkins Medical School, and Dr. George Corner, director of the embryological laboratory of the Carnegie Institution of Washington, are among the directors.

An annual award, not to exceed $5,000, for the outstanding contribution to the advancement of medical science made within the year by an American citizen, may be inaugurated by the board of directors.

Advancement of post-graduate instruction among physicians in sections of the country not accessible to medical centers in the larger cities is another project under consideration.

Science News Letter, March 4, 1944

New 10-inch leather *boots* for combat troops to replace the shoe-and-legging combination, have the outer side of the hide on the inside of the boots for greater comfort to the wearer; soles and heels are made of synthetic rubber.

Books of the Week

➤ ALARMED predictions are often voiced, that Americans are all going to be half-starved because of the government's policies in rationing, lend-lease and post-war emergency aid. In FOOD "CRISIS" (*Doubleday, Doran,* $2.50), Roy F. Hendrickson doubts this, and from the vantage-point of his experience as director of the Food Distribution Administration tells why—though he is careful to point out that he is speaking here strictly in a non-official, personal capacity. Whether one agrees with the author or not, this book must be admitted as material testimony in the debate.

Science News Letter, March 4, 1944

➤ REVOLUTION has been the *Leitmotiv* of events in Europe—in the world—since the beginning of the present century; easily recognizable now, its present pace is only an acceleration of tendencies discernible as far back as the end of the Victorian period. Walter Phelps Hall builds a compellingly interesting, though decidedly not cheerful, book, WORLD WARS AND REVOLUTIONS (*Appleton-Century,* $4.50), on this theme. A reading fills in hollow spots in the average person's historical background. The present edition covers military developments to the conclusion of the Tunisian campaign.

Science News Letter, March 4, 1944

➤ THERE MAY BE some truth in the old saw, that "genius works in turmoil": certainly in the history of the Netherlands there has been plenty of turmoil—and plenty of genius. How much of the latter, we are reminded by a new symposium, THE CONTRIBUTION OF HOLLAND TO THE SCIENCES, edited by A. J. Barnouw and B. Landheer (*Querido,* $3.50). Just to cite a few names picked at random from its pages—Erasmus, Grotius, Leeuwenhoek, Huygens; more modernly, Lorenz, van't Hoff, de Vries, de Sitter—would seem evidence enough.

Science News Letter, March 4, 1944

➤ TURNING trees into houses and other useful things has always had a strong element of romance about it; a ready and interested public can be expected for THIS FASCINATING LUMBER BUSINESS, by Stanley F. Horn (*Bobbs-Merrill,* $3.75). It is gratifying to find, in a book giving principal stress to the making and vending of forest products, so full and definite a recognition of the importance of sustained-yield forestry and other conservation practices as there is here.

Science News Letter, March 4, 1944

➤ KENDALL BANNING, who has already contributed several highly readable as well as informative books on military subjects, comes up again with a good one: OUR ARMY TODAY (*Funk and Wagnalls,* $2.50). Jeeps and tanks, mortars and machine guns, mobile field pieces and heavy coastal artillery, paratroopers and rangers, and all the rest of the multiform machinery and personnel of modern war pass in review. Illustrations, vivid and full of action, are mostly from official sources.

Science News Letter, March 4, 1944

➤ MAJOR developments in wartime China are reported in CHINA HANDBOOK, 1937-1943, compiled by the Chinese Ministry of Information (*Macmillan,* $5.00) This comprehensive reference book deals with China's history, political structure, foreign relations, mineral resources and public health. Major events during the war years are listed chronologically and an up-to-date Chinese "Who's Who" is included.

Science News Letter, March 4, 1944

➤ MEDITERRANEAN landings are the stuff of which TO ALL HANDS (*Whittlesey House,* $2.50) is made. Newspaperman by civilian profession, Navy officer for the duration, the author, John Mason Brown, had the difficult but important assignment of maintaining a constant flow of information, via public address system, to the men below decks, within gun turrets and otherwise walled off from a direct view of the action. In his book he does the same for us, vividly, realistically and with a welcome salting of humor.

Science News Letter, March 4, 1944

Just Off the Press

AIRCRAFT SHEET METAL WORK—C. A. LeMaster—*Amer. Tech Soc.,* 387 p., illus., $3.75. The book covers blueprint reading, template layout, patterns for bends, riveting, soldering, brazing, welding, and drop hammer work.

COSTS OF DENTAL CARE FOR ADULTS UNDER CLINICAL CONDITIONS: An Exploration of General Issues on the Basis of Initial and Maintenance Care Experience of 485 Patients of Dental Health Service, New York City—Dorothy Fahs Beck and Mary Frost Jessup—*Amer. College of Dentists,* 306 p., $1.50, paper.

AN EARLY PLEISTOCENE (BIANCAN) FAUNA FROM NEBRASKA — Paul O. McGrew—*Field Museum,* 33 p., 40 c., paper, Publication No. 546.

MASTICATORY APPARATUS IN THE GIANT PANDA AND THE BEARS—Harry Sicher—*Field Museum,* 12 p., illus., 15 c., paper.

NO NATION ALONE: A Plan for Organized Peace—Linus F. Fike—*Philosophical Lib.,* 96 p., $1.50.

ON THE CLASSIFICATION OF THE HISTERID BEETLES—Rupert L. Wenzel—*Field Museum,* 100 p., illus., $1, paper, Publication No. 545.

SHIPYARD DIARY OF A WOMAN WELDER—Augusta H. Clawson—*Penguin,* 181 p., illus., 25 c., paper.

TWO NEW THALASSEMYD TURTLES FROM THE CRETACEOUS OF ARKANSAS—Karl P. Schmidt—*Field Museum,* 11 p., illus., 25 c., paper.

UNRRA: GATEWAY TO RECOVERY—*National Planning Association*—84 p., paper, Planning Pamphlets Nos. 30-31.

•New Machines and Gadgets•

⚙ *A VARIABLE-SPEED electric razor has received a recent patent. In addition to an improved cutting head, it has a change-speed mechanism that can be shifted to various speed positions without interrupting shaving.*

Science News Letter, March 4, 1944

⚙ *NON-CURLING carbon paper for typists is promised under a new patent. The back of the paper is coated with a wax-like material applied in fine streaks running in parallel zigzag lines.*

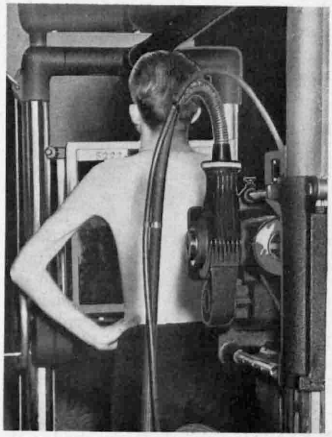
Science News Letter, March 4, 1944

⚙ *PLASTIC ethyl-cellulose wrappers protect machine parts in overseas shipping. Parts to be coated are dipped in the heat-liquefied substance, removed and cooled. The coating, of rubber-like consistency, is easily removed by slitting and stripping.*

Science News Letter, March 4, 1944

⚙ *PORTABLE, automatically operating, forced warm-air furnaces will be available for homes in post-war days. Self-powered and weighing only 45 pounds, they were developed for military use. Equipped with its own fuel supply and a tiny motor, these sealed units will supply enough pure heated air to keep average single-family homes warm in the coldest weather, it is claimed.*

Science News Letter, March 4, 1944



⚙ *MOBILE X-RAY laboratories developed for the Navy can photograph lungs and chests of 1,600 sailors a day. Men with lung conditions that need medical treatment are sorted out in the single day a war vessel may be in port. The installations are photofluorograph units, which make 35 millimeter pictures of the chest image as cast on a fluoroscopic screen by the X-rays. The illustration shows a sailor between the X-ray apparatus and screen.*

Science News Letter, March 4, 1944

⚙ *PASTRY GAUGE permits the accurate cutting of a pie into almost any number of equal parts. The pie, on its plate, fits into the round gauge which has graduations on its outer top surface. A pin pushed downward from the center of the handle of the patented device marks the center of the pie.*

Science News Letter, March 4, 1944

⚙ *LETTERING and figures are put on blueprints and tracings by a typewriter-like machine, large enough to accommodate tracing cloth or paper of any size without folding. Operated by a typist, it saves the more costly time of a draftsman.*

Science News Letter, March 4, 1944

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 197.*

Question Box

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