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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • JUNE 26, 1943



Observation Flight

See Page 410

A SCIENCE SERVICE PUBLICATION

Do You Know?

White paint on curbs is being used in some cities to promote safety during blackouts.

Northern native grasses cut in early July have twice the *protein content* they would have late in the month.

Egypt is turning this year from cotton raising to *food production*; the principal increases are in wheat, barley and beans.

Moisture-proof paint on match heads keeps the matches in usable condition for American soldiers in the moist tropics.

Australia soon will be producing power alcohol approximating 19,000,000 gallons a year; sugar, tar and molasses are the raw materials.

Tungsten carbide cutting tools are now sharpened by an *automatic grinder* which sets the proper angles, pressure on the grinder, and the timing.

Louisiana sugarcane is now practically all of disease-tolerant varieties bred and developed by the U. S. Department of Agriculture, or varieties selected and introduced by it.

The Tellico Wildlife Area in East Tennessee is the only area in the western hemisphere where there are genuine European *wild boars*; imported from England in 1912, they escaped and multiplied rapidly.

Question Box

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The Mexican *bean beetle*, in 1914 confined to New Mexico and Colorado, is now common in the eastern and south-western states.

A new synthetic fungicide known as *fermite* shows promise of satisfactory results on apples and stone fruits and may prove a substitute for copper-compound sprays.

Brazil is troubled with the problem of using 4,000,000 boxes of *oranges* which normally would go to Europe; free distribution at government expense to soldiers and school children solves it in part.

The five most common causes of the *deaths* of school children in the United States are, in the order named, accidents, appendicitis, influenza and pneumonia, rheumatic fever and tuberculosis.

Of the approximately 132 million *people* in the United States, 13 million live in New York State, 11 million of them in urban areas including over 7 million in New York City.

The Alaska salmon industry will produce this year, it is estimated, over 5,000,000 cases of packed *salmon* with a valuation more than seven times the amount paid Russia for Alaska in 1867.

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MEDICINE

Encephalitis Vaccine

Safe vaccines against two types of sleeping sickness announced. Blood tests show about half vaccinated may be protected from the disease.

► PRODUCTION of safe vaccines against two types of encephalitis, or sleeping sickness as it is popularly known, is announced by Major Albert B. Sabin, M.C., A.U.S., (*Journal, American Medical Association*, June 19).

Civilians and troops in training camps in the United States and United Nations armed forces in various theaters of the war may benefit from these vaccines, since they cover both the St. Louis and Japanese B types of encephalitis. Although the St. Louis type has so far been found only in this country, the Japanese B type has been found not only in Japan but in the Maritime District of the Far East of the U.S.S.R., and in Peiping, China, and is apparently related to an epidemic disease that has occurred in Australia.

The study leading to the development of the vaccines was undertaken at the suggestion of the Board for the Investigation and Control of Influenza and other Epidemic Diseases in the Army. Working with Major Sabin at the Children's Hospital Research Foundation and the University of Cincinnati College of Medicine were Dr. Carl E. Duffy, Lieut. Joel Warren of the Army, Dr. Robert Ward, Lieut. John L. Peck, Jr., of the Navy, and Dr. Isaac Ruchman.

Tests on 51 volunteers, laboratory personnel and medical students, showed that the vaccines could be given in two doses three days apart without danger and without pain during the injection or such local reactions as sore arms afterwards.

Blood tests showed that about half of those vaccinated developed, within two weeks, antibodies that neutralize the viruses of the diseases. Resistance to the St. Louis virus, it has been found, can be present without any sign of these neutralizing antibodies in the blood. Major Sabin and associates, therefore, are not inclined to draw any further conclusions about the protection that the vaccines may give.

In the face of a very severe developing epidemic of either St. Louis or Japanese B types of encephalitis, it may be desirable, the scientists cautiously state, to test the effectiveness of the vaccines

in protecting humans against the disease. They point out in this connection the apparently successful Russian experience in protecting against another type of sleeping sickness, spring-summer tick-borne encephalitis, with a vaccine prepared by similar methods.

The two vaccines announced by Major Sabin were made by treating infected mouse brains with formaldehyde to destroy their infective property. This was done at a temperature just above freezing. In order to give the vaccines keeping quality, so they could be stored against emergencies, sodium bisulfite was added to neutralize the formaldehyde and they were then frozen and dried by the lyophilic process.

Keeping quality and speed of action were important objectives in developing the vaccines, since they would be used only during epidemics. In both St. Louis and Japanese B types of encephalitis, the epidemics may not last longer than six to eight weeks. They are late summer

and early autumn diseases generally believed to be spread by mosquitoes from an animal reservoir of the viruses.

Science News Letter, June 26, 1943

ENGINEERING

Mobile Housing Popular In War Industry Sections

► MOBILE HOUSING is proving particularly useful where new war industries have been built. No ghost town will be left after the war, however, for the entire community can be folded up and moved elsewhere.

Mobile houses for one and two families, such as those produced by the Palace Travel Coach Corporation, are even now being used to help alleviate the housing shortage. Some of the homes have four rooms. Already over 500 of the two-family units alone have been set up in a center near the Willow Run bomber plant.

Utility units have been developed so that when the need for housing in a particular community has ended, they may be transferred to another location. These units consist of bath and toilet, laundry and office units. They are designed to accommodate from thirty-five families to an entire mobile community.

Still in the experimental stage are houses to consist of five rooms, bath and



MOBILE HOUSING—These houses that can be folded up and moved elsewhere overnight are proving particularly useful in alleviating the housing shortage near new war plants.

reception hall. These houses, equipped with folding wings, ceilings and floors, are so compact that they can be hauled over the highways by truck trailers.

Mobile houses at present are available only to war industries and the National Housing Agency, but in the postwar era we may look forward to being able to purchase these haul-away homes at low cost. Imagine waking one morning and finding that the neighbor's house has disappeared overnight!

Science News Letter, June 26, 1943

MEDICINE

Bismuth Given with Quinine To Speed Malaria Recovery

► GIVING a bismuth compound with quinine may speed recovery in some cases of malaria, Dr. Martin D. Young, Dr. Sol B. McLendon and Dr. Roy G. Smarr, of Columbia, S. C., suggest (*Journal, American Medical Association, June 19*).

Their report is based on paresis patients who were given malaria to cure their syphilitic condition, but the scientists state that the combination of thio-bismol and quinine "might be useful in malaria infections generally."

The bismuth compound seems to injure the half-grown vivax malaria parasites and reduce their numbers in the blood. As a result the drug eliminates the fever paroxysms which that brood of parasites would have produced. For patients with syphilis of the brain and nervous system, this means that the malaria given to cure their syphilitic condition can be controlled to produce fever paroxysms every other day instead of every day. The daily paroxysms often tax the patient so severely that he cannot continue the full course of treatment.

For curing the malaria, once its effect on the syphilis has been achieved, quinine is usually given. Quinine, however, frequently does not prevent the occurrence of the fever paroxysms for several days after it has been started. When the bismuth compound is given at the same time as the quinine, it prevents the paroxysm of the next day and after that the quinine controls the infection.

The bismuth compound used was sodium bismuth thioglycollate, known also as thio-bismol. The studies were made at the South Carolina State Hospital, to which Dr. McLendon and Dr. Smarr are attached. Dr. Young is stationed at the malaria research laboratory of the U. S. Public Health Service, National Institute of Health, at Columbia.

Science News Letter, June 26, 1943

PUBLIC HEALTH

Fuel Lack Not Harmful

No deaths, no epidemics, in fact no adverse effect on public health has been reported from last winter's fuel oil rationing.

► DESPITE dire predictions and numerous complaints, last winter's fuel oil rationing did not impair the public health, Director Joel Dean, of the Fuel Rationing Division, OPA, declares (*Journal, American Medical Association, June 19*).

"No single case of death due to fuel oil rationing directly or indirectly has been substantiated nor any epidemic unearthed that could be laid to fuel oil rationing," he states.

In almost every case reported of sickness or other hardship, investigation showed that either relief had been given by the local board or the condition had been grossly exaggerated. Some genuine cases appeared, Mr. Dean states, and a few that were badly handled.

To make sure, before next winter, that there was no harm to the public health from the fuel oil rationing, Mr. Dean asked for statements on the subject from representative health officers.

Replies were received from city, county and state health officers of 19 states and the District of Columbia. The 14 states from which no replies were received were those which had less severe weather and from which fewer hardship cases were reported.

Deaths allegedly due to lack of fuel oil were reported by 10% of these health officers but they indicated that the cause was doubtful and the cases had not been investigated. Another 25% stated positively that no such deaths had occurred and 65% did not report any deaths.

Considerable illness was reported by 15%, some illness due to lack of fuel oil by 25%, while 45% stated positively that no illness had been caused by rationing fuel oil and 15% stated that decreased household temperatures had improved public health.

One hundred per cent did not report epidemic situations.

Science News Letter, June 26, 1943

MEDICINE

Sulfa Costly for Colds

Recovery from colds fails to be hastened by use of sulfadiazine while cost of treatment is boosted seventeen times.

► YOU won't get over a bad cold any faster by taking a sulfa drug and the drug will cost you at least 17 times as much as the medicine your doctor might ordinarily prescribe for relief of your discomfort.

Basis for this statement is a report of results of sulfadiazine treatment of severe colds in hundreds of soldiers treated at the Station Hospital, Jefferson Barracks, Mo., during the winter of 1942-1943. The report was made by Lieut. Col. Howard A. Rusk and Capt. Arie C. van Ravenswaay, both of the Medical Corps, A.U.S. (*Journal, American Medical Association, June 19*).

Their report covers a clinically controlled study, such as would be difficult among civilians, of 670 soldiers with simple infections of the respiratory tract

which the layman would call a cold or sore throat. All of them were sick enough and had enough fever to warrant being sent to the hospital. Sulfadiazine was given to 317 while another 314 were given A.P.C. capsules, containing aspirin, phenacetin and citrated caffeine. The rest were given Dover's powder, an ipecac and opium mixture, with such poor results that the treatment was discontinued.

In the group that got the sulfa drug, 15 cases of pneumonia developed, compared with 14 in the other group. Average number of days of fever in the sulfa drug group was 2.7, in the non-sulfa drug group 3.1. The sulfa drug treated group were well enough to leave the hospital, on the average, in 7.2 days, as compared with 7.4 days for the other group.

Since there were no deaths and no appreciable difference in the complications between the two groups, the Army doctors considered the relative costs of the two treatments. On an arbitrary basis of 100 new hospital cases daily, treat-

ment with sulfadiazine would cost \$2,250 a month, while treatment with the A.P.C. capsules would be \$120 a month for all patients treated. In civilian life, they point out, the differential would obviously be much greater.

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RESOURCES

Axis Oil Estimated

Germany and Japan reported to have increased synthetic oil output; petroleum from conquered Burma and East Indies aids Jap war machine.

► HOW MUCH gasoline and other essential petroleum products are available to Germany and Japan is unknown, but estimates have been made from data from sources partly reliable, at least.

These estimates are the results of studies by V. R. Garfias and co-workers of Cities Service Company. They were presented at a recent meeting of the American Institute of Mining and Metallurgical Engineers.

Japan's output for 1941 was about 8,800,000 barrels, of which 5,500,000 barrels were petroleum substitutes. The out-

put of synthetic oils was increased in 1942, raising the total interior production of Japan to an estimated 10,000,000 barrels.

In 1942 Japan gained possession of oil fields in Burma and the Netherlands Indies which in normal times produced about 78,000,000 barrels a year. Only about 23,000,000 barrels were produced from these fields in 1942, it is reported. This indicates that Japan is now getting at least 33,000,000 barrels a year, which is 8,000,000 barrels more than its greatest peacetime yearly consumption.

"The output for 1942 of the European Axis countries and controlled areas," Mr. Garfias and his associates state, "is roughly estimated at 112,000,000 barrels, or 20% greater than in 1941. From many reliable sources, it is reported that Germany is steadily increasing its synthetic oil output."

In 1942 this is reported to have been approximately 46,000,000 barrels. If this is so, nearly half of the German supply is now petroleum substitutes.

These figures do not take into consideration the effect of the recent bombings by the United Nations Air Forces of German industrial cities.

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PHYSICS

Physicist Claims Magnetic Currents and Poles Exist

► IN THE MILLIONS of magnets used in electrical apparatus, there exist magnetic currents and magnetic ions which are similar to electric currents and electric ions.

This is the view of Dr. Felix Ehrenhaft, formerly Director of Physical Institute of the University of Vienna, who has been in this country for the past few years. Dr. Ehrenhaft, who had previously described his theory to scientific societies, reported to the American Physical Society meeting in State College, Pa., "Further Facts Concerning the Magnetic Current."

Single magnetic poles or magnetic ions, north or south, exist, according to Dr. Ehrenhaft, just as electric ions, positive or negative, are known to exist, and the magnetic current consists of a streaming of these magnetic ions just as the electric current consists of a streaming of the electric ions. And just as a single magnetic pole will revolve around an electric current—a well-known fact—single electric ions will revolve around a magnet. The positive and negative ions revolve in opposite directions and reverse their rotations when the magnetic field is reversed. This, he stated, can be seen under the microscope, and he showed photomicrographs of the experiments to substantiate his statements.

The new theory, he declared, represents a much closer union and analogy between electricity and magnetism than had been established by Faraday, Maxwell, and Hertz, founders of the present electrodynamic theory.

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Oil from alligators is suitable for use in motors.



SPORTSMAN'S DREAM—An inflated rubber boat similar to the one above may be used on post-war fishing trips. It will hold five men with all their fishing tackle, as many fish as they can catch, and yet, deflated, can be carried to the lake or stream in an automobile.

ASTRONOMY

Venus at Her Brightest

The planet on July evenings is sixty times more brilliant than the brightest star visible in the summer sky. Scorpius is dominating constellation.

By JAMES STOKLEY

▶ **THOUGH VENUS** is now the only planet shown on our star maps, and easily visible through the month, its brightness is equal to that of several planets at other times. All during July it continues to brighten. On the last day it reaches its greatest brightness, of magnitude minus 4.2 in the astronomer's scale. This is about 60 times as bright as Vega, the bright star nearly overhead in the constellation of Lyra. Vega is the most brilliant star visible on summer evenings.

Because of its splendor, Venus is very easy to find. Long before the sky is dark, it shines prominently in the west—indeed, it can even be seen before sunset if you look in the right direction and stand in a shaded place so that the sun does not shine in your eyes. Probably it was a glimpse of Venus under some such conditions that gave rise to the common and erroneous belief that it is possible to see stars in the daytime from the bottom of a well or a chimney.

Conspicuous Constellation

The most conspicuous constellation of the July evening, which dominates the summer sky in the same way that Orion does that of winter, is Scorpius, the scorpion, low in the south. Its brightest star, of a characteristic red color, is called Antares. This group can easily be identified from the maps. These show the appearance of the heavens at 11:00 p.m., War Time, on the first of July, and at 10:00 p.m. on the 15th. The position given for Venus, by the way, is that for the 15th. Venus passes close to Regulus in Leo, the lion, on July 6. This star is not shown on the maps.

Vega, along with Altair, in Aquila, the eagle, and Deneb, in Cygnus, the swan, form a large triangle of stars in the eastern sky. Altair, by the way, can be recognized easily because of the fainter stars nearby, one above, the other below. Another first magnitude star that July brings us is Spica, in Virgo, the virgin, in the west, and above this constellation we have Bootes, the bear

driver. In it shines the star Arcturus.

Though the stars it contains are not among the brightest in the sky, an interesting summertime figure is that of Hercules, almost directly overhead. Six of the stars in it outline a butterfly, the body in an east-west direction. Between Bootes and Hercules is a pretty little figure, Corona Borealis, the northern crown, a semi-circle of stars which the American Indians called a council of chiefs seated around a campfire. Below Hercules, and above Scorpius, is Ophiuchus, the serpent carrier, a large constellation sometimes associated with Aesculapius, the mythical god of medicine, to whom the serpent, as a symbol of renovation, was sacred.

Jupiter Seen Early

Though Venus is the only planet shown on the map, Jupiter can be observed low in the west in the early part of July. On the 30th it will be in line with the sun and invisible. Saturn has now moved far enough to the west of the sun to be seen in the early morning sky in the constellation of Taurus, the bull, rising a couple of hours before the sunrise. Mars, now brightening as it approaches the earth, is in Aries, the ram, and rises about 1:00 a.m.

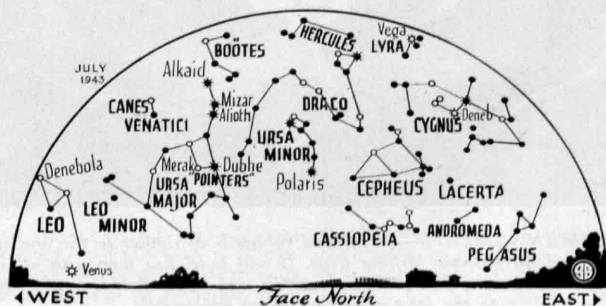
One astronomical event of July will not be visible from the United States and Canada, yet probably more United States citizens will see it than would have seen it in that part of the world under ordinary conditions. This is an

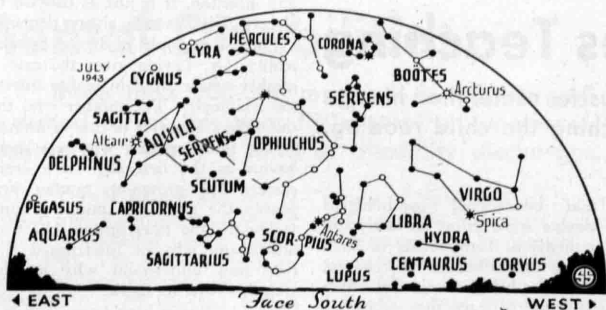
eclipse of the sun visible, as a partial eclipse, in Australia and the islands to the northwest of it, where our soldiers are fighting. It will also be seen over most of the Indian Ocean.

Annular Eclipse

This is not a total eclipse, but an annular one. That is, it occurs when the moon is farther away than average, and its apparent size in the sky is not quite enough completely to cover the sun. Even at its height, therefore, a ring, or annulus, of the sun's surface appears around the lunar disk. Or we may picture the shadow of the moon as a long cone. At a total eclipse, the tip of the shadow reaches the earth's surface, but at an annular eclipse, like this one, it falls short. The path over which the ring of sunlight will be seen around the moon just misses the southwestern tip of Australia, so over that continent the moon will be seen partly covering the sun.

A curious feature of this eclipse is that while it will occur on August 1, it will still be the last day of July here in the United States when it begins. This is because it is the other side of the International Date Line, where the new day is born, and during the next 24 hours gradually creeps around the globe. The very first effect will be seen in the vicinity of Madagascar, where the sun will rise with a tiny piece bitten out, just as the eclipse is ending. That will be at 4:36 a. m. there by local time, though it will be 9:36 p. m. in the eastern United States on the evening of July 31. At Sydney, Australia, the partial eclipse will begin about 2:10 p. m. on August 1, and that will be





◊ * ◦ SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

12:10 a. m., E. W. T., on the first for us in the United States.

Another kind of eclipse will happen on July 6 which will be visible in the eastern United States. This will be an eclipse, properly called an "occultation," of the planet Venus. At Washington at 10:01 a. m., E. W. T., the moon will pass in front of the planet. This will be in broad daylight, and the moon and planet will be below the sun. Consequently it will not be easy to observe, but a pair of binoculars may help to locate the planet. At 11:04 a. m. the planet will reappear from behind the moon. Away from Washington, the times will be slightly different. In western Massachusetts, for example, the planet will hide at 10:03 and return to view at 11:12 a. m. In the middle and

far west, the occultation will be over before the moon rises.

Celestial Time Table for July

July	EWT	
2	8:44 a.m.	New Moon.
4	3:58 a.m.	Moon passes Jupiter.
	6:00 a.m.	Earth farthest from sun, distance 94,452,000 miles.
	6:00 p.m.	Moon farthest, distance 252,400 miles.
6	12:04 p.m.	Moon passes Venus, occultation visible in eastern U. S.
10	12:29 p.m.	Moon in first quarter.
17	8:21 a.m.	Full moon.
	6:00 p.m.	Moon nearest, distance 222,100 miles.
24	12:38 a.m.	Moon in last quarter.
	6:58 p.m.	Moon passes Mars.
28	early a.m.	Meteors of delta Aquarid shower visible.
	8:11 a.m.	Moon passes Saturn.
30	9:00 a.m.	Jupiter in line with sun.
31	1:00 p.m.	Venus at greatest brilliance.
	11:00 p.m.	Moon farthest, distance 252,600 miles.

Subtract one hour for CWT, two hours for MWT, and three for FWT.

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ENGINEERING

Lubricant Test Shortened

Time required to evaluate heavy-duty diesel lubricants slashed from nearly three weeks to a single day by development of new testing engine.

► TEST PERIODS for heavy-duty diesel lubricants have been cut from nearly three weeks to only a day by development of a new test engine. Success of a single-cylinder Fairbanks-Morse engine as a research tool was reported to the meeting of the Society of Automotive Engineers in Cleveland by H. L. Moir, W. J. Backoff and N. D. Williams of the Pure Oil Company.

Their tests revealed that ring-sticking or sluggish ring action caused more power loss than increased piston temperatures. Variations in ring-sticking time for each type of lubricant are reported

due to differences in refining and sources of crude.

Although some oils cause less ring-sticking, they may produce dirty pistons, the researchers reported, so cleanliness also had to be considered in evaluating and producing heavy-duty type lubricants.

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Engines Conserve Space

► PANCAKE DIESEL ENGINES now powering Navy ships weigh less than a fourth as much as previous marine

diesels of comparable power. They put out a horsepower for every four pounds of weight.

Details of this new compact engine which occupies only a third the space of more conventional power plants was revealed to the meeting by J. C. Fetters of the electro-motive division of General Motors Corporation.

The nickname "pancake" stems from the four banks of 4-cylinder radial units stacked one on top of the other. This lightweight 16 cylinder engine is upended on its gear box to keep space requirements to a minimum.

Other radical departures in design required five years of cooperative research between Navy and General Motors engineers before the engine was ready.

Then, just two months after Pearl Harbor, production got under way, Mr. Fetters disclosed, and the pancake engines are now being installed in Navy ships.

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Autos Will Use High-Octane

► HIGH-OCTANE and high taxes will be the double feature of post-war gasoline. Now available only for the military, this gasoline will feed small, light peacetime autos, Dr. C. M. Larson, chief consulting engineer of the Sinclair Refining Company, New York, told members of the Society of Automotive Engineers.

Production of this type of gasoline will likely be detrimental to diesel fuel ignition quality, the speaker declared, and will force engineers to design diesel engines which will get the utmost out of low-cetane fuels.

Diesel fuels will be on the critical list by next year, Dr. Larson believes. He estimated that 1945 production ratio of gasoline to distillate fuel would be seven to one, compared with three to one at the start of the war.

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● RADIO

Saturday, July 3, 1:30 p.m., EWT

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

Dr. Samuel C. Prescott, Emeritus Dean of Science, Massachusetts Institute of Technology, will speak on "Food Technology."

PSYCHOLOGY

Behavior Guides Teaching

Way he acts and uses his muscles rather than his age should provide the signal for teaching the child reading, writing as well as how to walk.

➤ A CHILD'S BEHAVIOR, rather than his age in years or his mental age, may in future signal when it is time to start teaching him arithmetic, reading, writing or even more advanced subjects such as history, geography and foreign languages.

This forecast of a possible revolution in educational methods appears in the conclusion of a new book, *The Neuromuscular Maturation of the Human Infant*, by Dr. Myrtle B. McGraw, New York child psychologist.

How the child behaves and uses his muscles shows when he is ready, for example, to start learning to walk, Dr. McGraw reports from her study of infants. The very young infant when held upright on the floor will often make rapid stepping motions which may even carry him a few feet forward. But these steps do not appear related to the head or upper part of the body.

Later, as his mind begins to be aware of different parts of his body and of position, he will not make these stepping motions but will hold his feet firmly to the floor as if glued there. Still later, when he is about ready to start walking, he may begin to move his feet deliberately, looking at them as he does so and deliberately holding his body erect. This indicates that he is getting the idea of using his feet, moving his legs and at the same time holding his body up as a means of locomotion.

Similar signs in the baby's behavior show when he is ready to learn other skills involving use of both muscles and mind. They indicate the development of his nervous system to the point where the higher centers in the brain are acquiring awareness of sensation, control over muscles and knowledge of how to associate sensation with muscular control for a definite purpose.

Until this point is reached for different parts of the nervous system control, it is useless to try to teach or train the baby. Once it is reached, the time has come when he can be taught most economically to perform a given act.

Since this is true of early learning of body control and muscular function, it is probably also true, Dr. McGraw believes, of academic learning. So she sug-

gests that educational psychologists should devote some effort to analyzing the ingredients or components of each subject, such as arithmetic or reading, and to learn the behavior signs of when a child is ready to learn that subject.

Much else of interest to educators and to parents is contained in the book, although, since it is a report of scientific studies, it may prove too technical for the ordinary lay reader.

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PSYCHIATRY

Much Sickness Caused By Failure to Grow Up

➤ ACHIEVING GROWN-UP, mature feelings and attitudes is a difficult job, but an important one from the standpoint of both health and happiness. Many of the people who crowd the doctors' offices are sick, with real aches and pains and disorders of digestion or other functions, because they have not acquired emotional maturity. The goals which describe this kind of maturity are given by Dr. Maurice Levine, of the University of Cincinnati, in a recent book for doctors, *Psychotherapy in Medical Practice*. Here they are:

1. Ability to be guided by reality rather than by fears.
2. Use of long-term values.
3. Grown-up conscience.
4. Independence.
5. Capacity to "love" someone else, but with an enlightened self-interest.
6. A reasonable dependence.
7. A reasonable aggressiveness.
8. Healthy defense mechanisms.
9. Good sexual adjustment with acceptance of own gender.
10. Good work-adjustment.

If you are confused about how a person can be both independent and reasonably dependent, the explanation is that one should not be a "clinging vine" woman or the type of man who expects to be babied by his wife, but should be able to stand on one's own feet and make decisions, yet able to take useful advice and to both give and receive love

and affection. It is just as babyish to be always giving as to be always demanding.

For an example of being guided by reality, Dr. Levine gives the case of a mother whose child in reality interrupts too frequently. The mother who thinks the child's behavior is cute is immature, but so is the mother who sees such behavior as the first step in a criminal career. The grown-up mother neither praises the child nor punishes him severely for the interruption, but tries to understand why he interrupted and to help him understand why he should wait his turn to speak.

Science News Letter, June 26, 1943

CHEMISTRY

Corn and Sorghum Varieties Substitute for Tapioca

➤ A STICKY starch from certain kinds of corn and sorghum, the new substitute for tapioca, will be produced this year to fill the most essential industrial needs. By 1944 all reasonable requirements should be met, M. M. MacMasters and G. E. Hilbert of the U. S. Department of Agriculture's Northern Regional Research Laboratory told the American Association of Cereal Chemists meeting in St. Louis.

Between 300 and 400 million pounds of tapioca starch was formerly imported from the Jap-held Dutch East Indies; about 50,000,000 pounds cannot be replaced by the common cereal starches, it has been estimated.

This special starch is used for textile sizing and finishing, and paper coatings.

Tests show that glutinous starch from corn and sorghum can successfully replace tapioca in most industrial and food uses.

"Because of its desirable adhesive properties," the scientists pointed out, "considerable quantities of glutinous starch may find use in the plywood industry."

Two sorghum varieties, Sagrain and Leoti, are already in comparatively extensive production.

"Since there was very little commercial interest in glutinous cereals before Pearl Harbor," the cereal chemists were told, "it is a matter of considerable good fortune that both corn and sorghum varieties had been developed to a point where they could be of immediate use for seed stocks."

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Dehydrated eggs retain practically all the vitamin A of fresh eggs.

PSYCHIATRY

Mental Disabilities

More than 100,000 men will be discharged from the armed forces this year for mental or emotional ill, it is estimated. Nearly a third of disability discharges.

➤ MORE THAN 100,000 men will be discharged from the armed forces because of mental or emotional troubles during the year 1943. This estimate "from reliable sources" was quoted by Dr. Luther E. Woodward, Field Director, Liaison with Selective Service of the National Committee for Mental Hygiene. He spoke at a conference of social workers and representatives of the state departments of welfare and mental hygiene called by the medical officer of Selective Service of the State of Pennsylvania.

Nearly a third of the men discharged from the armed forces because of disability are discharged because of mental or nervous disorders, Dr. Woodward declared. From November 1, 1940, to February 1, 1943, 80,607 men who had been inducted through Selective Service and 26,962 enlisted men were discharged for disability. Of these, about 33,000 were discharged because of mental or nervous disorders. Still more were discharged

because of "inaptitude" or "convenience of Government." These latter groups include many who for mental or psychiatric reasons cannot adapt themselves to Army life.

Dr. Woodward urged psychiatric social service facilities which would furnish to draft boards or induction officers social histories that would enable them to make a better judgment of the ability of the drafted man to make good in the Army.

"It is hoped," he said, "that the personnel of the Selective Service System and of the social work and psychiatric professions will be able to carry forward a cooperative program, whereby it will be possible to select for the armed forces men who are really fit, and to retain in civilian occupation those who can carry on there but are unable to adjust to the rigors of military life, thereby strengthening national security and safe-guarding the mental health of many citizens."

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careless, the criminal and the social outcast. It is truly a social disease."

Dr. Smillie urges public health administrators to concentrate their attack on syphilis where it exists, bending every effort to control it in the Negroes of the community.

"There has been a tendency in official health circles," he states, "to gloss over or to ignore the high prevalence of syphilis in the Negro. We now realize that this policy has been a short sighted one."

"The sooner the facts are recognized and syphilis control work directed accordingly, the better it will be both for the Negro race and the nation as a whole, he says. In this connection he points out that the Selective Service figures also show that those states having the highest syphilis rates in Negroes also have a higher than average rate in white men.

The figures cited by Dr. Smillie bring to light two cheering aspects of the situation: 1. The rates in Massachusetts and Rhode Island show that syphilis may be brought under some degree of control among Negroes as well as whites; 2. When allowance is made for the large Negro population in this country, our syphilis rate compares favorably not only with the much-quoted low rates in Scandinavian countries but "with any nation in the world."

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PUBLIC HEALTH

Draft Aids Syphilis Study

Noted disease fighter demands new line of attack. Syphilis exists primarily among lower classes and draft figures show it essentially a Negro problem.

➤ A NEW LINE of attack on syphilis is called for in a challenging statement by one of the nation's distinguished disease fighters, Dr. W. G. Smillie, of Cornell University Medical College.

Syphilis in the United States is primarily a Negro problem, Dr. Smillie points out (*Journal, American Medical Association*, June 5).

Selective Service figures from 1940 to 1942 show, he declares, that the syphilis rate in Negro men is at least ten times higher than that in white men.

Recent figures from the registration of 18- and 19-year old men, cited in an editorial in the same issue of the medical journal, show that syphilis ranks second to educational deficiency as a

cause for rejection of Negro men, although it does not appear among the first 10 causes of rejection among white men.

"Most of the popular propaganda that has been used in promoting syphilis control in the United States has been highly misleading," Dr. Smillie states on the basis of the figures. "One person in ten will have syphilis" is a popular saying but it is untrue.

"The incidence of syphilis among white men in the greater part of the nation is low and is limited for the most part, in the white race, to the lowest classes of society. Among the whites syphilis has become, in the great majority of cases, a disease of the ignorant, the



HOT AIR—This is what happens when a stream of hot air hits an electric fan revolving at 1800 r.p.m. It was pictured at the general engineering laboratory of the General Electric Company with a high speed camera, using an exposure of about 1/2,000,000 second

SEISMOLOGY

Earthquake Was Twins

Double Japanese earthquake recorded in the same region that started disastrous tidal wave against coast of Japanese Honshu in 1933.

► THE EARTHQUAKE on Sunday, June 13, off the coast of Japan, was twins, with one shock at 1:11.7 a.m. and the other at 4:36.5 a.m., EWT., seismologists of the U. S. Coast and Geodetic Survey reported after study of telegraphic and radio data transmitted through Science Service from a number of American and overseas observatories. Both quakes started from beneath the same epicenter, which was in latitude 43 degrees north, longitude 142 degrees east.

This spot is in the Japan Deep, a "hole in the bottom of the sea" off the north-east coast of Hokkaido, Japanese island. It is possible that a tidal wave was caused. Such a wave was started by an earthquake under the same deep on March 2, 1933; it sent a 96-foot wave charging up narrow Ryori bay, and drowned out a number of fishing villages all along the

coast of Honshu, main Japanese island.

However, even if a big wave was started by the present double earthquake, it is not likely that material damage would be caused in the Tokyo-Yokohama industrial area, which is well to the south.

Another pair of earthquakes was reported from the China sea a few days before. Both occurred on Tuesday, June 8, but data from the remoter observatories were delayed in transmission.

The first shock which started at 4:42.2 p.m., EWT, centered in latitude 19 degrees north, longitude 116 degrees east. This is in the north central China sea, about midway between Luzon and the Chinese island of Hainan.

The second occurred at 11:06.7 p.m., EWT, and had its epicenter in latitude 9 degrees north, longitude 120 degrees

east, in the northern part of the Sulu sea, in the southern Philippines. Both were strong shocks.

Stations reporting were the government observatories of Sydney, Australia, and Wellington, New Zealand; the Franklin Institute, Philadelphia; the Des Moines, Iowa, Observatory; the observatories of the Jesuit Seismological Association at St. Louis University and Weston College, Mass., and the stations of the U. S. Coast and Geodetic Survey at Sitka and College, Alaska, Tucson, Ariz., Chicago, Ill., and Honolulu, H. T.

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ORNITHOLOGY—AERODYNAMICS

Men First Watched, Then Imitated Flight of Birds

See Front Cover

► LEONARDO the Florentine, more than 400 years ago, and long before him many an envious, earthbound Daedalus, watched, fascinated, the effortless flight and soaring of birds. Leonardo made schemes and drawings, perhaps built models, but knew only muscle-power to engine larger craft—and human muscle-power is inadequate. Not until the last half-century did a light enough source of outside power appear, in the internal-combustion engine.

By that time, too, latter-day Leonardos like Lilienthal, Chanute, Langley and the Wrights were paying the needed attention to those marvelous balancers, the birds' wing-tips, which earlier experimenters had largely neglected in their preoccupation with the problem of propulsion through flapping.

It is probable that we have not yet learned the last lessons which those unconscious teachers, the birds, have for us; so that "Observation Flight," the title given to the photograph on the cover of this week's SCIENCE NEWS LETTER by its taker, R. B. Stewart of Yellow Springs, Ohio, can be construed in two ways—from the bird's viewpoint and from our own. The picture was an award-winner in the Fifth International Salon of Nature Photography, held recently at the Buffalo Museum of Science.

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A brick aging solution, applied to new bricks set into old walls, makes the new and old look alike in a few hours.

The Parker dam on the Colorado river has its fourth electric generator in operation; the capacity of the power plant is now over 115,000 kilowatts.

ERRATA, Vol. 43, Nos. 1-26, January-June, 1943

PAGE	TITLE BEGINS	CORRECTIONS
26	Soda Pop Gas	Col. 2, line 13, <i>insert before Safety, C-O-Two Fire Equipment Co.</i>
61	Few Premature Bursts	First 3 lines should read: Any shell body that causes more than one premature explosion in the gun for every 1,250,000 rounds fired must be considered unsatisfactory from the standpoint of safety, Col. H. H. Zornig.
98	Question Box	Under Nutrition <i>delete first question.</i>
111		<i>Delete top of Col. 1 and Col. 2.</i>
146	Do You Know	Item 8, line 1, <i>feet for inches. Line 2 should read, larger than a lead pencil.</i>
163	Caption	Third line from bottom, <i>PeCerson for Penderson.</i>
202	Mercury Appears	Col. 3, line 8, <i>April 8 for April 9.</i>
203	Mercury Appears	Col. 1, 8th line from bottom, <i>8 for 9.</i>
218	Weeds Go to Work	Col. 3, lines 9 & 10, <i>should read: Dr. C. F. Burgess, of the Burgess Battery Co.</i>
263	Easter at Its Latest	Col. 1, Par. 5, 2d sentence <i>should read: The Council actually specified March 21 as the basis for calculations instead of using the vernal equinox. 3d sentence, insert Theoretically before the vernal. Delete last sentence in paragraph.</i> Par. 6, 1st sentence <i>should read: This year the ecclesiastical full moon preceded the beginning of spring by one day, so Easter, etc. Line 4, 18 for 20.</i>
266	Rabbits for Meat	Col. 3, par. 5, line 10, <i>when for and within another month.</i>
268	Tooth Decay Vaccine	Par. 3, line 1, <i>delete a new material; line 2, par. 4, line 12, and last par., line 14, methyl-methacrylate for methal-methacalnt.</i>
296	Band-Tail Pigeon	Par. 3, line 4, <i>passenger pigeon for carrier.</i>
327	Novel Dual Personality	The case referred to occurred in 1897 and has been previously reported in medical literature.

• New Machines and Gadgets •

❁ AN ELECTRIC flashlight bulb in a waterproof transparent cap, worn while swimming, permits the location of a person under water. The battery is attached to the belt. If a person equipped with this recently patented device finds himself in trouble, he presses a key on the battery and the light appears on top of his head.

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❁ A NEW suspender-and-belt combination, just patented, consists of a single flexible strap and four triangular slotted pieces which are sewed to the trousers, two on front and two on rear. The strap is turned at right angles in passing through them. It passes over both shoulders and the ends buckle together in the front.

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❁ ELECTRIC CABLES with four spiralling wires, over which three telephone and four telegraph messages may be transmitted at the same time, are used in the Army field service. Electronic instruments which generate carrier currents are used at each end. The cables are rubber-coated and can be used on the ground or in trees.

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❁ THE INSECTICIDE spray gun shown in the picture contains no metal; it is made of plastics, paper, wood and leather. It is light, effective and easy to

manipulate. To hold the liquid spray, it has a squat, broad-based bottle which will not upset readily. The barrel is of spiral-wound paper, the plunger of wood and leather; the rest is a molded black cellulose acetate plastic. This war-time substitute for critical metal insect-control guns is primarily for household uses.

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❁ MECHANICAL DEVICES to fold surgical dressings are reported to be in mass production for Red Cross volunteer units. They are four times faster than the hand method. The device is a small board with hinged flaps that fold over with the gauze, permitting precise folding without touching the hands.

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❁ COLD-DRAWN STEEL BARS for bullet cores from open-hearth steel are found to be satisfactory. The process permits greater production. Electric furnace steel is released for other purposes. Centerless grinding equipment used in the old process is also released.

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❁ THE BACK-SCRUBBING brush just patented simplifies the job of scrubbing or scratching the back. The device is highly flexible and self-adjusting. It consists of an elongated cylindrical brush

with two flexible arms long enough to encircle the body.

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If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 162.

PSYCHOLOGY

Exercises May Reduce Time For Adapting Eyes to Dark

➤ THE EYES of night fighters can be adapted to darkness in from five to six minutes instead of the usual 25 to 45, if the men take light muscular exercise, Dr. Krikor Kekcheyev, Russian scientist, reports (*Nature*, May 29).

Dr. Kekcheyev's experiments on the effects of exercise on night vision are a follow-up of work previously reported in which he found that exciting other sense organs would speed dark adaptation of the eyes. He stimulated the sense of taste by feeding the men sugar.

In the present experiments ten subjects were used and an adaptometer was used to measure the dark adaptation. Not only was the time of adaptation reduced—an important matter for men going on night duty—but the sensitivity of the eyes was 20 to 30 per cent higher after the exercise than after the men remained at rest for 45 minutes in darkness, Dr. Kekcheyev said.

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First Glances at New Books

► **KNOWING A LOT** about a subject does not by any means require that you be unintelligible when you undertake to tell about it. This is admirably exemplified by one of the country's most learned entomologists, Prof. James G. Needham, in his new book for beginners, **INTRODUCING INSECTS** (*Jacques Cattell Press*, \$1.75, plus postage). His discourse is as lively as the subjects thereof; informative without being dry, educative without being didactic, and spiced with occasional nibbles of humor. The little line drawings by Ellen Edmonson catch and convey the spirit of the text.

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► **HOW THE SUN** affects terrestrial weather, and to what extent observation of solar phenomena can be reliably used in weather forecasting, constitute one of those questions on which there has been no end of "learned argument about it and about." The case *pro* is presented fully, and supported vigorously, in a new two-volume work, **SOLAR RELATIONS TO WEATHER** (*Clayton Weather Service, Canton, Mass.*, \$3 per vol.), by H. H. Clayton, who has been one of the foremost investigators of this subject.

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► **THEY NEED NOT VANISH** is the challenging title of a new book on conservation, published by the Michigan State Department of Conservation (\$1) under the editorship of Helen M. Martin. It might well serve as a model for other states, in taking inventory of what they still have in wildlife, forests, soils and waters, and in planning what may be done about preventing further destruction of irreplaceable assets.

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► **FOOD PRODUCTION** again is emphasized; and this may bring about overloading and abuse of the soil, as it did during and immediately after World War I. It is important therefore that students in agricultural colleges be soundly instructed in all that pertains to the good of the soil. In **FUNDAMENTALS OF SOIL SCIENCE**, G. E. Millar and L. M. Turk (*Wiley*, \$3.75), have produced an excellent text for this purpose.

Science News Letter, June 26, 1943

► **IMAGINARY** proto-human beings somewhere back in the pre-pleistocene live in a fictionalized account in **DARKNESS AND THE DEEP**, by Vardis Fisher

(*Vanguard*, \$2.50). Their intelligence and social behavior are pictured as at about the baboon level; but one genius among them, named Wuh (a mutant, perhaps) discovers the beginnings of weapon-use, shelter-construction and personal adornment.

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► **ZOOLOGISTS** will not be alone in welcoming William J. Hamilton's **THE MAMMALS OF EASTERN UNITED STATES** (*Comstock*, \$4). Although the data are exact enough to satisfy the most scholarly of professional mammalogists, the manner of presentation is simple and clear enough to permit its use by the wildlife worker in the field or the interested amateur naturalist. Noteworthy features are the distribution maps and the 30 careful wash drawings by Earl L. Poole. In addition, there are many half-tone illustrations.

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► **RUSSIAN-AMERICAN** collaboration is a new thing in the military field, but happily it is something of much longer standing in science. Most recent fruit of this old union is an English version of E. V. Wulff's definitive work, **AN INTRODUCTION TO HISTORICAL PLANT GEOGRAPHY** (*Chronica Botanica*, \$4.75); Elizabeth Brissenden is the translator. Presentation of the facts of geobotany against a background of paleobotany greatly facilitates understanding of the plant world as it exists.

Science News Letter, June 26, 1943

► **A WORTHY ADDITION** to one of the best series of wartime information books is **WHAT YOU SHOULD KNOW ABOUT THE SIGNAL CORPS**, by Harry Meyer Davis and F. G. Fassett, Jr. (*Norton*, \$2.50). Like its companion volumes, it is simply but correctly written, cleanly illustrated.

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Just Off the Press

- A. S. T. M. STANDARDS ON PLASTICS** — A. S. T. M. Committee D-20 on Plastics—*Amer. Soc. for Testing Materials*, 374 p., illus., \$2. Specification methods of testing nomenclature definitions.
- THE ADSORPTION OF GASES AND VAPORS: Vol. 1, Physical Adsorption** — Stephen Brunauer—*Princeton Univ. Press*, 511 p., illus., \$7.50.
- AIR TRANSPORT NAVIGATION: For Pilots and Navigators**—Peter H. Redpath and James M. Coburn—*Pitman*, 612 p., illus., \$5. An authoritative text book and reference work.
- AIRCRAFT CONSTRUCTION HANDBOOK** — Thomas A. Dickinson—*Crowell*, 237 p., illus., \$2.50. By U. S. Navy aircraft inspector at Consolidated Aircraft Corp.
- AIRCRAFT MATHEMATICS**—S. A. Walling and J. C. Hill—*Cambridge Univ. Press*, 186 p., illus., \$1.75. Rev. ed. Of British origin rev. for use in U. S.
- ALASKA DIARY, 1926-1931**—Ales Hrdlicka—*Jacques Cattell*, 414 p., illus., \$5.
- AMERICAN WORDS AND WAYS: Especially for German Americans** — John Whyte — *Viking*, 184 p., \$2.50.
- CHEMISTRY AND METHODS OF ENZYMES** — James Batcheller Sumner and G. Fred Somers—*N. Y. Academic Press*, 376 p., illus., \$5.
- THE CHEMISTRY OF ALIPHATIC ORTHOESTERS**—Howard W. Post—*Reinhold*, 188 p., illus., \$4. *Amer. Chemical Soc. Monograph Series*.
- DIAGNOSIS OF UTERINE CANCER BY THE VAGINAL SMEAR** — George N. Papanicolaou and Herbert F. Traut—*The Commonwealth Fund*, 46 p., illus., \$5.

- DICTIONARY OF WORLD LITERATURE; Criticism, Forms, Technique** — Joseph T. Shipley, editor — *The Philosophical Library*, 633 p., \$7.50. Includes such items as: dialectic, rhopalic verse, Indian drama, neo-classicism.
- THE FLEAS OF NORTH AMERICA**—H. E. Ewing and Irving Fox—*U. S. Dept. of Agriculture*, 143 p., illus., 20c.
- A HANDBOOK FOR NURSE'S AIDES**—Katherine Tucker Orbison—*Devin-Adair*, 196 p., illus., \$2.
- A HANDBOOK OF PLANT TISSUE CULTURE** — Philip R. White—*Jacques Cattell*, 277 p., \$3.75.
- MANAGING YOUR MIND: You Can Change Human Nature**—S. H. Kraines and E. S. Thetford—*Macmillan*, 274 p., \$2.75. Psychiatry for the layman.
- MINERALS IN WORLD AFFAIRS** — T. S. Lovering—*Prentice-Hall*, 394 p., illus., \$5.35.
- RADIO TROUBLESHOOTER'S HANDBOOK** — Alfred A. Ghirardi—*Radio and Technical Pub Co.*, 743 p., illus., \$5.3d rev., enl. ed.
- SCIENCE AND CRITICISM: The Humanistic Tradition in Contemporary Thought** — Herbert J. Muller—*Yale Univ. Press*, 303 p., \$3.75.
- STUDIES OF EVAPORATION AND TRANSPIRATION UNDER CONTROLLED CONDITIONS** — Emmett Martin—*Carnegie Institution, Publication 550*, 48 p., illus., 40c.
- WHAT TO DO TILL THE DOCTOR COMES** — Donald B. Armstrong with collaboration of Grace T. Hallock—*Simon and Schuster*, 345 p., illus., \$1.
- WHOOPIING COUGH** — Joseph H. Lapin — *Thomas*, 238 p., illus., \$4.50.