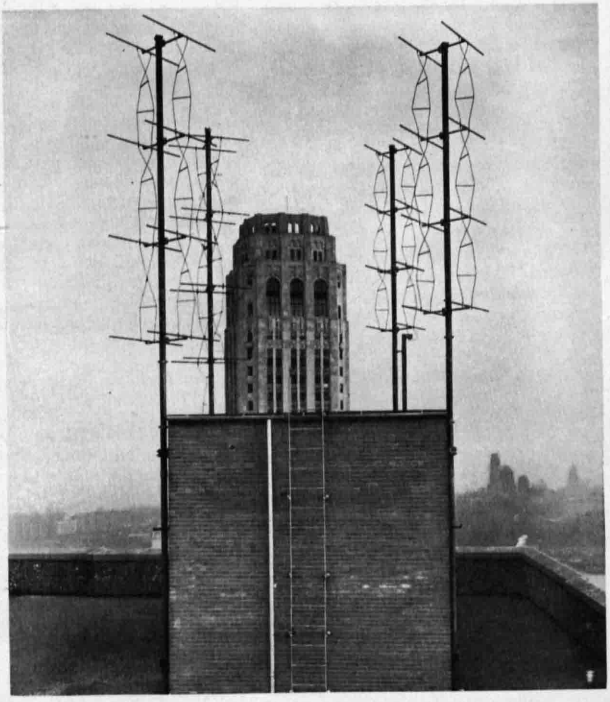
RICE
15¢

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



JUNE 27, 1936

To Send Pictures Far

See Page 409

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

VOL. XXIX No. 794

The Weekly Summary of

Current Science

Published Every Saturday by

SCIENCE SERVICE

2101 Constitution Avenue

Washington, D. C.

THE INSTITUTION FOR THE POPULARIZATION OF SCIENCE organized 1921 as a non-profit corporation, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

Edited by WATSON DAVIS

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

Canadian subscribers please add 50 cents a year, foreign subscribers 75 cents a year to regular subscription rate to cover postage.

Members of the American Association for the Advancement of Science have the privilege of subscribing to SCIENCE NEWS LETTER at the reduced price of $3 per year. Application for this privilege should be accompanied by privilege card obtained from the Permanent Secretary, A.A.A.S., Smithsonian Institution Building, Washington, D. C.

In requesting change of address, please give your old address as well as the new one in notification to Circulation Department, SCIENCE NEWS LETTER, 2101 Constitution Ave., Washington, D. C., at least two weeks before change is to become effective.

Cable address: Scienserve, Washington.

Entered as second class matter at the post-office at Washington, D. C., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices.

Advertising rates furnished on application. Member Audit Bureau of Circulations.

DO YOU KNOW?

Although trees cannot walk, they do sometimes move several feet, as for example when floods and gravity affect their soil support.

Mexico is taking official steps to cooperate with Canada and the United States in protecting migratory birds and game animals.

Rocks and fossils collected by Admiral Byrd's expedition to Little America in the Arctic are to be added to Harvard University's geological museum collections.

It is found that the bacteria that cause plants to develop crown gall disease (plant cancer) are able to withstand heat of 122 degrees Fahrenheit for only ten minutes.

National Park naturalists find that visitors can be kept interested in a park museum for an average of twenty minutes, if the material is attractively presented.

Ticks, which spread Rocky Mountain spotted fever, are most numerous in early summer, which makes the latter part of summer safer for campers and hikers so far as this disease is concerned.

Gold coverings for fingers and toes were found recently in Egypt with the mummy of a princess who died about 3600 B.C.

Warning gardeners to keep down weeds, a New York crop specialist says: "Even a small growth of weeds will often reduce yields one-half."

In testing wind resistance in an automobile traveling 50 miles an hour, it was found that addition of a trunk decreased the total pull by 11 per cent.

The ferocious attack of an eagle swooping on a terrified herd of deer has been compared to human warfare by air, but is said to be far more cleverly executed.

An airplane expedition to photograph Mount McKinley, Alaska, and surrounding mountain country will attempt as one camera feat to catch Mount McKinley's picture from directly overhead.

It is believed that the volcano Mauna Loa in Hawaii pours out lava and is otherwise in a disturbed state at intervals of 11 years; and that it also has a 134-year cycle marked by major explosions.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

ACOUSTICS

What words are easiest to hear? p. 413.

ARCHAEOLOGY

On what did Athenians mark their votes? p. 407.

Who wrote shorthand in ancient Greece? p. 410.

Where were kings named for a pagan deity? p. 410.

ASTRONOMY

How successful were the eclipse expeditions? p. 410.

Where is the newest "new star"? p. 409.

How can Peltier's comet be seen? p. 414.

BACTERIOLOGY

What makes earth smell agreeably after a rain? p. 412.

CHEMISTRY

What new chemicals are important in medicine? p. 411.

How thick can a film be made? p. 412.

How can turpentine yield be increased? p. 413.

ENTOMOLOGY

Are termites extending their range? p. 407.

Where are there "pacifist" bees? p. 412.

MEDICINE

What new aid has the war on tuberculosis received? p. 411.

Is diabetes incidence decreasing? p. 412.

PUBLIC HEALTH

Are Eskimos usually healthy? p. 411.

RADIO

How far can three-meter radio waves travel? p. 409.

SAFETY

What is the "dangerous age" for fireworks? p. 408.

ARCHAEOLOGY

Ballots of Old Elections Unearthed in Athens' Agora

Like Ourselves, the Greeks Voted "Against" Oftener Than They Voted "For"; Clay Ballots Used

ARCHAEOLOGISTS digging up the market place at Athens are glad the Athenians voted on durable stuff when they went to the ballot box.

Our own nominating conventions and elections, with paper ballots or voting machines, are not going to provide anything so helpful for historians 2000 years hence as the good old Athenian ballots on scraps of broken clay dishes that were the wastepaper of that distant day.

The most famous Athenian voting was done, not to put men into power, but to keep them out of it. A Mussolini or a Hitler would not have stood much chance of dominating the ancient city-state of Athens in its democratic days. The Greeks had a word for preventing that, and the word was ostracism. Once a year the day for this voting came around, and if any man seemed dangerously powerful, he could be voted out of Athens for ten years.

Famous Names on Ballots

About 150 of these historic votes, or sherds, some inscribed with names as familiar to schoolboys as to scholars, have so far been unearthed in the Agora, or market place, in the course of the extensive excavations by the American School of Classical Studies at Athens.

Sherds marked with the name Aristides continue to come to light, and are veritable relics of the day when Aristides the Just walked in the market place and watched his fellow citizens vote him into political exile. One sherd might even be in the handwriting of Aristides himself, if tradition is correct that an illiterate stranger asked him to write his own name on a bit of clay because he was "tired of hearing Aristides called the Just."

Misspell Names

Other ballots that have been found bear the names of Hipparchus, the first man known to suffer ostracism from Athens, and Themistocles—one clay ballot misspells his famous name.

Whether the man who is said to have invented ostracism, Clisthenes, was himself ironically made the first victim of the political device, is a debated question. If Clisthenes' name should appear on sherds dug out of the old voting ground, it would not prove that he piled up a vote sufficient to make ostracism official, but it would lend some weight to the tradition to that effect.

Science News Letter, June 27, 1936

ENTOMOLOGY

Termites Now Known in Every State in the Union

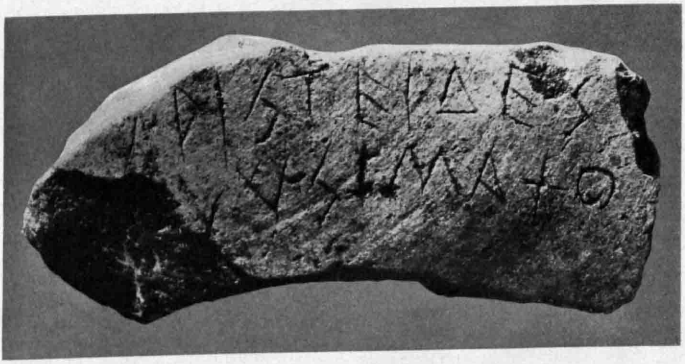
TERMITES, whose timber-ruining activities have caused a great deal of alarm in American cities, are now known to exist in every state in the Union, Prof. Alfred E. Emerson of the University of Chicago reports (*Science*, May 1). Vermont, Michigan, North Dakota, Wyoming and Montana are among northern states recently added to the termite list.

However, Prof. Emerson adds—and emphasizes—this need not be cause for added alarm, or even for surprise. The winter-defying genus of termites are not invaders from the tropics, as has frequently been asserted. They are native to the Temperate Zone, and cannot even live in the tropics. Fossil evidence strongly indicates that this particular group of termites has lived in much the same kind of climate for many millions of years.

Cases of accidental introduction of foreign termite species into houses and other man-made environments are on record, Prof. Emerson states, but these insect immigrants have never been known to spread into the natural habitats of native termite species and compete with them there. These introductions have thus been confined rather closely to their original areas of invasion.

Prof. Emerson concludes that since there is no valid evidence as yet to indicate that termites are spreading northward within historical times or are markedly increasing in numbers in any locality, he is "inclined to discount statements of such increase or extension unless accompanied by critical evidence. Often these statements are part of the propaganda of fear which is spread by persons or firms interested in commercial eradication of termites, either through their own ignorance or through the desire to exploit the ignorance of the lay public. Reputable firms engaged in termite eradication, however, often find a strong tendency for householders to exaggerate the damage caused by termites and, unquestionably, many magnified accounts are merely examples of the human tendency to 'improve the truth.' Likewise it is also possible to give examples of human apathy when faced with a real termite menace."

Science News Letter, June 27, 1936



"ONE VOTE AGAINST ARISTIDES!"

The name of the famous Athenian, exiled because his neighbors grew afraid of his power, can be clearly read on the top line of this potsherd ballot. The photograph is from Art and Archaeology.

SAFETY

Fireworks Danger Appears In Several New Forms

Desire of Young America to Get Most Noise For Money Responsible For Flash Crackers, Cheap but Vicious

By JANE STAFFORD

NEW dangers have arisen to threaten the safety of life and limb on July Fourth. One is the hazard from the growing practice of throwing lighted firecrackers at groups of bystanders or hurling them into passing automobiles. During last year's celebration of the American Independence Day, 1,359 accidents were caused by this pernicious custom, the American Museum of Safety's Fireworks Accident Prevention Committee found. In this group of accidents were 17 serious eye injuries including two cases of complete blindness and two more cases of loss of one eye.

"This practice, born of the instinct of selfishness and rowdyism, should be severely dealt with," declares the chairman of the committee, Dr. Leland E. Cofer.

Unintentional Homicide

The committee recommends that the local board of aldermen in every city and town should pass an ordinance against the throwing of lighted firecrackers at passing automobiles, with the severest penalties for "this piece of rowdyism." One police official stated that throwing a lighted firecracker at a passing automobile should be followed by arrest and prosecution for "unintentional homicide."

The second new July Fourth danger is the custom of placing lighted firecrackers under a tin can or in an empty bottle. As a result of this practice last year, one boy had a piece of tin and solder blown through his clothes and into his heart. In another case, the force of flying bits of tin cut the tendons in the hands of a bystander.

Two cases of blindness in one eye and probably both, and two cases of eye removal resulted from setting off firecrackers in milk bottles. A bottle containing a lighted firecracker was thrown into a passing automobile, severely injuring faces and hands of the occupants, and a serious automobile accident was barely averted. One boy died and two bystanders were severely injured when a lighted firecracker was placed in an empty 1,000 gallon gasoline tank, which still contained a small amount of gasoline.

A third July Fourth danger lies in the practice of picking up lighted firecrackers and examining them to see why they did not go off. This, Dr. Cofer points out, is like the reports of peasants in France being injured by picking up unexploded bombs in wheat fields. Fireworks accidents of recent years remind this physician of war injuries.

More Powerful Explosives

Possibly there is still another new danger in July Fourth celebrations. The present brands or makes of firecrackers seem, in Dr. Cofer's opinion, to contain more powerful explosives than was the case in the past. As examples of this new hazard, he cites two cases. In one, where a firecracker exploded among loose pebbles, one pebble was blown into a girl's leg with such force that it had to be dug out. In the other case, a pebble struck the eyeball of a boy with such force that it caused localized detachment of the retina with resulting blindness.

Paradoxical though it may seem, manufacturers of fireworks are actively engaged in a drive to eliminate the dangers of July Fourth celebrations. Substantial funds for a nation-wide study of Fourth of July accidents, undertaken by the American Museum of Safety, were provided by these manufacturers. Of the more than seven thousand accidents reported last July Fourth, three thousand have been investigated in detail.

Firecrackers Most Dangerous

Firecrackers, this study shows, are the most dangerous July Fourth fireworks, numerically speaking. They caused over two thousand of the accidents last year. It is not the firecracker but the flash cracker which is dangerous, C. H. Fleming, executive secretary of Pyrotechnic Industries, Inc., explains. In his opinion, the flash cracker was responsible for most of the accidents attributed to firecrackers. The committee which made the study did not differentiate between the two kinds.

The flash cracker has taken the place of the giant cracker, the old-time July Fourth villain. The reason is that the American boy wants the loudest piece of fireworks he can get. Flash crackers, easy and cheap to make and easy to sell, are the answer. As a result, the American boy is being supplied each year with not only the noisiest but the most vicious piece of fireworks.

Reputable manufacturers do not make this type of fireworks and have tried unsuccessfully to stop its manufacture in this country and its importation, Mr. Fleming pointed out.

No Age is Immune

From 11 to 16 years is the dangerous age for July Fourth accidents, a committee of the American Museum of Safety found in its study of the kinds, causes, and results of casualties of the "Battle of the Fourth of July."

No age is immune from the toddler of a year and a half to his great-grandfather at 80 years. In the three thousand last July Fourth accidents studied by this committee, 797 boys and girls between 11 and 16 years were injured. Boys, of course, led in the ratio of 638 to 159. In this group, 60 youngsters suffered eye injuries, ten losing their sight in one eye and three more having to have an eye removed.

"These seem to be the tragic ages for children," comments Dr. Cofer.

Mothers should keep their children under five years indoors during the Fourth of July season, Dr. Cofer advises, or at least send them for the day of the Fourth into some institution devoted to the temporary or permanent care of children. Last year 146 little children between 1 and 5 years old were injured and 9 were killed. Very young children may be seriously injured, even if they are not taking an active part in setting off fireworks.

Science News Letter, June 27, 1936

Some kinds of spiders catch small fish.

To be effective against moths, says a home economics specialist, a cedar chest should be made of the reddish heart wood which contains the volatile cedar oil.

A blood disease called piroplasmosis, that weakens racing greyhounds and other dogs, is due to the brown dog tick and is being treated by injections of a blue dye.

ASTRONOMY

New Exploding Star Already Beginning to Lose Brightness

Nova Lacerta Flashed Suddenly From Obscurity Until It Matched the Brilliance of the North Pole Star

THE NOVA, brilliant new exploding star discovered simultaneously (June 18) by four independent observers in this country and Europe, has already begun to fade, Harvard astronomers say.

As bright as the Pole Star on June 20, by the early morning of June 22 it had already faded to less than third magnitude. Measurements made at Harvard College Observatory on June 20 showed its magnitude to be 2.3. The Pole Star, with magnitude 2.1, is thus only two-tenths of a magnitude brighter. It did not reach the first-magnitude brilliance attained by the great nova in Hercules, which was the "big show" of the winter heavens in 1934-35 (*See SNL,* Dec. 22, 1934).

The nova, first to come into view since the famed Nova Herculis, is the same type of exploding star as its predecessor. It was of the third magnitude when discovered and easily visible to the naked eye. It is a little north of the zenith at 4 a.m., but in high northern latitudes it is visible all night.

Word of the discovery was received at Harvard College Observatory, clearing house for astronomical news in the Western Hemisphere, from four observers. They are Leslie C. Peltier, Delphos, Ohio, amateur astronomer who a few weeks ago discovered a new comet in the same part of the sky (*See SNL,* May 30); Eppe Loreta of Bologna, Italy; A. V. Nielsen of Aarhus, Denmark; and C. Hoffmeister, of Sonneberg, Germany.

The Yerkes Observatory first reported the magnitude as 2.9, and placed it in the high temperature class, "B-9." According to Dr. Otto Struve, director of the Observatory and a specialist in the study of stellar spectra, the star shows diffuse hydrogen and magnesium absorption lines as well as strong interstellar calcium lines.

The rate of explosion is estimated about 1,000 kilometers or more than 600 miles per second.

Michigan University observations, made by Dr. Dean B. McLaughlin and communicated by director H. D. Curtis, confirmed those from Yerkes.

Particularly interesting is the fact that the nova was discovered on the day of a total solar eclipse, like Nova Aquilae, brightest nova of the century, which also was found the day of a total eclipse in 1918. This is purely coincidental, however, and has no astronomical significance, so far as is known.

Astronomers all over the world are observing the star, for like Nova Herculis, it is capable of contributing valuable information on the nature of stars and volutionary processes in general throughout the universe.

Astronomers have been combing over old photographic plates, taken of that particular region in the heavens many years ago. The earliest photographic record of the star thus far found is on a plate made at the Yerkes Observatory on October 11, 1893. It was then of fifteenth magnitude, far below visibility to the naked eye, and requiring a fairly powerful telescope to see it at all. When it began its climb to the sudden sensational brilliance it recently attained is not known, but it became a hundred thousand times brighter than it was in 1893.

The "new" star has already had to be renamed. A more careful examination of the sky maps shows that it is not in the constellation Cepheus, as at first announced, but in the neighboring smaller constellation Lacerta, or the Lizard. It has therefore been re-christened Nova Lacerta. The star map on page 415 will aid you in locating the nova.

Science News Letter, June 27, 1936

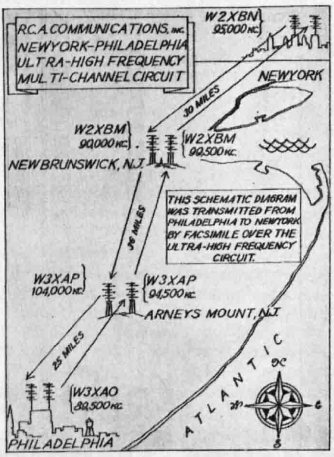
RADIO

Facsimile Transmission Hailed as Revolution

See Front Cover

FEW happenings in science so aptly illustrate the progress of the last century as do the contrasts between Prof. Samuel F. B. Morse's telegraph of 1836 and the newest short radio wave facsimile transmission system recently demonstrated between New York and Philadelphia.

While Morse's telegraph clicked out its historic "What hath God wrought" at a rate of a few score words a minute, the new development of the Radio Corporation of America can transmit messages at a rate of 12,000 words a minute, and in both directions at the same time.



"WHAT HATH GOD WROUGHT"

This map, showing the locations of the terminal and intermediate radio stations used in the RCA facsimile communication system between New York and Philadelphia, is the 1936 equivalent of the famous message Prof. Samuel F. B. Morse sent in 1836 over the original telegraph, "What hath God wrought." The map was transmitted over the new facsimile system at the first public demonstration.

Moreover, and strikingly characteristic of the newest development, the three-meter wavelength communication system sends whole messages as exact facsimiles of the original message. If the message is written in longhand the message received is a replica and one easily recognizes the handwriting of the sender. Whole drawings, maps, fingerprints and all similar pictures are as easily transmitted.

At the receiving end the drawings are made automatically by apparatus which operates at 120 lines to the inch, giving detail far better than the coarse 55 line-to-the-inch engraving screen of ordinary newspaper pictures.

Facsimile by radio is, in itself, nothing new. Weather maps have been sent to ships at sea for over a year. The highlight of the new RCA development is that it utilizes a band of radio frequencies never before employed for commercial communication.

Only three meters (about 10 feet) in wavelength from crest to crest, the RCA

high frequency waves have as an advantage their freedom from static and as a handicap, for very wide use, their limited range.

The limits of horizon from a tall building is as far as the radio waves of this new type can be received effectively. Thus two "booster" stations are employed between New York and Philadelphia and the average transmission distance between stations is about 30 miles.

The economics of the system thus hamper enthusiastic persons who envision the present development as the immediate parent of a similar device which will some day bring into every home a complete replica of the morning newspaper that would be transmitted silently throughout the night.

Such a system, revolutionary in what it might do to the mechanics of newspaper publishing, may come sometime but not just yet.

The cover of this week's SCIENCE NEWS LETTER shows the transmitting towers of the "booster" station which retransmits the high-frequency radio waves used in the new RCA facsimile system of communication between New York and Philadelphia.

Science News Letter, June 27, 1936

HADAD, THE THUNDERER

ARCHAEOLOGY

"Key" to Greek Shorthand Makes Transcription Possible

"STENOGS," wrinkling their pretty foreheads over notes that have "got cold" since the boss dictated them yesterday, just don't know how tough a transcription job really can be.

How would you like to try to decipher a shorthand notebook that somebody else wrote about 2000 years ago—in Greek?

That is the job which scientists of the British Museum have set for themselves. A chance to decipher ancient Greek shorthand now appears possible, through the discovery, in the archives of the Museum, of a papyrus manuscript bearing many shorthand signs and in parallel columns the equivalent words in ordinary Greek characters. If you can read Greek really fluently, maybe you might be able to puzzle out some of the stenographic notes.

This ancient shorthand is made up of about the same kinds of strokes that one finds in present-day Gregg, but there are surrounding flocks of "ticks" that are rather reminiscent of Pitman. The important "key" specimen in the British Museum appears to have been written by an expert, for the characters are smoothly and beautifully formed.

Considerable quantities of shorthand manuscript have survived from ancient Greek times, but until now nobody has been able to read them. The British Museum specimen is expected to unlock this stenographic literature, as the famous Rosetta Stone found in Egypt over a century ago unlocked the until-then mysterious hieroglyphic writing of the old Nilotic obelisks and temples.

Greeks of early Christian times, as well as of the classic days, had their shorthand-writing secretaries—who, incidentally, appear always to have been young men. The famous Church Father, Origen, is said to have kept seven stenographers busy with his rapid-fire dictation. Their notes were read by other scribes—frequently young women—who transcribed them in Greek longhand. Origen would doubtless have rejoiced, had he been able to get hold of typewriters—for he was a quantity-production author.

Science News Letter, June 27, 1936

ARCHAEOLOGY

Image of Ancient Syrian God Found at Dura on Euphrates

THE calm, bearded face of an ancient Syrian god—Hadad the Thunderer—and an elaborate temple built for his worship, have been discovered in ruins of Dura on the Euphrates.

Yale scientists, pronouncing latest buildings uncovered at Dura "sensational finds," said that the temple of Hadad contains a high altar built like a miniature Tower of Babel. The high altar, standing within a court, is about 17 feet square and 16 feet tall, and is approached by a flight of steps. An altar of burnt offerings in the principal sanctuary and the throne of the high-priest before it have been preserved.

Hadad was a god of storms, whose name is familiar to Bible students because three kings in the Bible had names in which this heathen god's name formed a part.

The discoveries at Dura include the headquarters of the governor or Duke of the Euphrates frontier in Roman Empire days. The vast complex of the building included offices, barracks for bodyguard, and living quarters with elaborately painted walls and ceilings. Household attendants included a troupe of actors.

In one guard room, the archaeologists have found on the wall the opening lines of Virgil's Aeneid scrawled by a Roman soldier. A living room has yielded a magnificent oval brooch of gold four inches across, ornamented in filigree and set with garnets and emeralds.

The place of the hereditary mayors of the city, also revealed, contains over 40 rooms and two great courtyards.

Science News Letter, June 27, 1936

ASTRONOMY

Most Eclipse Observers Had Favorable Weather

THE Harvard-Massachusetts Institute of Technology eclipse expedition at Ak Bulak, U.S.S.R., had perfect observing conditions, states the first wireless message from Moscow received by Science Service. The National Geographic Society-Georgetown University expedition at Kustanai had clouds to contend with, but succeeded in completing part of its program. Soviet, Italian and Czechoslovak expeditions at Sara also had perfect weather. Soviet parties at Krasnodar had clear weather. Results of the eclipse observation will not be available until the parties return.

Science News Letter, June 27, 1936

PHYSIOLOGY

Animals Disinfect Wounds By Constant Licking

LICKING their wounds, a practise universal among animals, has good bacteriological justification, Dr. Herman Dold, professor of hygiene at the University of Tübingen, has found. Cultures of bacteria to which saliva was added failed to thrive, while untreated "control" cultures grew flourishing colonies of the germs. It therefore appears likely that in addition to keeping dirt and hair out of their wounds by the constant licking, the afflicted animals are also applying an effective antiseptic.

Science News Letter, June 27, 1936

CHEMISTRY

Announce New Chemicals Important in Medicine

RESULTS of research that may give important leads for the solution of problems of sex, cancer, and morphine addiction were announced by Prof. L. F. Fieser and his associates of Harvard University. Details of the chemical research appear in *Science* (June 5).

Methods used by members of this research team in the previously reported production of cancer-causing chemicals were applied to the production of chemicals that may affect the body as does the female sex hormone, oestrone. These new chemicals may provide a further link in the chain leading to laboratory production of this sex hormone.

Two newly synthesized substances are now being tested for cancer-causing potency.

"Of interest in connection with the morphine problem" are two chemicals of a new type derived from hydrophenanthrene. A difference of one chemical group between these compounds and morphine is reported as significant.

Remove Habit-Forming Property

Efforts to make a non-habit-forming morphine, being carried on in numerous chemical laboratories, have been directed toward changing the chemical groups that make up morphine in such a way as to remove the habit-forming property of the drug without disturbing its pain-relieving property.

Associated with Prof. Fieser in these researches were Mary Fieser, E. B. Hershberg, H. L. Holmes, and M. S. Newman.

Science News Letter, June 27, 1936

PUBLIC HEALTH

Health and Civilization May Go Together

A NUMBER of current notions about the relation of civilization to diseases seem to be upset by recent studies of Canadian Eskimos in the eastern Arctic. The idea, for example, that primitive peoples cannot eat civilized man's foods without having their health damaged is not borne out by observations on these Eskimos.

The observations were made by Dr. I. M. Rabinowitch of Montreal during the Canadian Government Eastern Arctic Patrol last summer. Dr. Rabinowitch examined Eskimos at various points around the Hudson Straits, Hudson Bay and Baffin Bay.

At Craig Harbour, the most northerly post in the eastern Arctic, Dr. Rabinowitch found two families of Eskimos who live most of the year in huts rather than their native tents and who eat "appreciable quantities of white men's food," although, being Eskimos, they like raw meat and eat large quantities of this also. All members of these families were very healthy, Dr. Rabinowitch reports. (*Canadian Medical Association Journal,* May.)

"Contact with civilized man is thus obviously compatible with good health," he states.

Need Scientific Direction

Present policy with regard to these Eskimos is to keep them living as far as possible under their native conditions. Dr. Rabinowitch approves of this as a health measure, but points out that it may not be possible to continue it. He sees no reason why the Eskimos cannot change over to white men's customs and diet without suffering ill health if the change is made under scientific direction.

At present he finds the Eskimos generally healthy except for poor teeth and eyes. The bad condition of the teeth is not due to neglect but to the custom of softening leather by chewing twists of it. Eskimos in the northern posts who had in many cases filthy teeth did not suffer so much from pyorrhea and caries as those in the regions to the south where many of them kept their teeth clean. But wherever leather chewing was practiced the teeth, though healthy, were badly worn down.

The Eskimo "disturbs our idea" of the importance of a strenuous life in relation to hardening of the arteries, Dr. Rabinowitch says, observing that there is no sign of this disease at the northern posts where, presumably, the natives must live strenuously in order to live at all.

Diabetes is another disease from which the Eskimos do not seem to suffer. Dr. Rabinowitch also saw no evidence of rickets, although people living so near the North Pole, and having pigmented skins, could not get much of the rickets-preventing ultraviolet rays into their bodies. The absence of the disease is probably due to the fact that the vitamin D content of seal oil, which they eat freely, is equal to that of the best cod liver oil.

Science News Letter, June 27, 1936

MEDICINE

Blood Test for TB Shows Patient's Outlook

A BLOOD test which has proved valuable in determining the probable outcome of pulmonary tuberculosis was described by Dr. A. H. Duncan, of the Muskoka Hospital for Consumptives, Gravenhurst, Ont. (*Canadian Medical Association Journal,* June).

The test is made by drawing a sample of blood into a slender, upright tube and noting the rate at which the red cells settle out as sediment. Why the red blood cells should form a sediment at a different rate in disease than in health is not definitely known, but the rate of sedimentation seems to indicate the degree of tissue breakdown going on in the body.

This test shows the activity of pulmonary tuberculosis with an accuracy of 94 per cent and gives more reliable information about the patient's condition than can be learned from such signs as fever, pulse rate, cough, sputum, loss of weight and the like. In over six hundred patients Dr. Duncan found this test gave reliable information as to the activity of the disease, the patient's fitness for discharge from the sanatorium, and his chances for recovery. A persistently rapid sedimentation rate, Dr. Duncan reported, shows a grave outlook for the patient.

Science News Letter, June 27, 1936

IN SCIENCE FIELDS

PHYSICS

Scientific World is Going Off Radium Standard

THE scientific world is gradually going off the radium standard. It used to be that the standard price of radium was $100,000 per gram (one-thirtieth ounce). That was when the United States was the chief producer from radioactive ores in Colorado.

Rich radium deposits were discovered in the Belgian Congo and low production costs gave Belgium a monopoly, dropping the price to $60,000 and later to $40,000 per gram.

In the past two or three years natural radium has been threatened by several rivals: intense X-rays from conventional X-ray tubes; artificially radioactive substances, made by bombarding elements; neutron rays; deuteron rays, streams of cores of heavy hydrogen.

One radiation producer, the cyclotron of Prof. Ernest O. Lawrence of the University of California, is capable of producing radiation that would require a hundred kilograms of natural radium to equal. With radium at the present nominal price of $40,000 per gram, that is $4,000,000,000 worth of radium.

One effect of all this activity is that the price of radium is probably due for another slump. It is rumored that if anyone wants a dozen or so grams of radium, they can be obtained for about $15,000 a gram.

Science News Letter, June 27, 1936

MEDICINE

Diabetes Cases Increasing Though Insulin Prolongs Life

ON THE sidewalks of New York some 45,000 to 60,000 persons go to work and to play unaware of the fact that they have diabetes mellitus.

If they only knew they had the disease and could have proper medical treatment for it in its early stages, the course and length of their lives would be quite different, in the opinion of Dr. Arthur Martin Tiber, physician in charge of the diabetes clinic at Bellevue Hospital, the largest general charity hospital in New York City.

For 24 years the number of diabetes cases in Bellevue Hospital has been steadily growing. New cases increased nearly 310 per cent in this hospital between 1911 and 1935, the period covered in a statistical study by Dr. Tiber. (*The Journal of the American Medical Association,* May 2.)

Insulin has definitely prolonged the life span of diabetic patients, this hospital's statistics show, although the death rate had begun to go down before the hospital began the routine use of insulin in February, 1923.

In this hospital, diabetic deaths have fallen 40 per cent in the 24 years covered by Dr. Tiber's study. The percentage of deaths in diabetes was 29.1 in a five-year period beginning in 1911; in the five-year period ending with 1934, the deaths dropped to 17.5 per cent.

Actually, in point of numbers, more persons are dying of diabetes today than early in the period studied. But deaths are increasing at a much slower rate than incidence of the disease. While this is encouraging, the disease is far from under control for there is relatively a greater increase in deaths from diabetes than there is in deaths from all causes, the study shows.

The frequency of the disease in New York City was estimated at 3.7 per thousand in 1911 and at 12.2 per thousand in 1929-1934. The total number of diabetic patients in the city during 1934 is estimated at 90,000, from one-half to two-thirds of whom are unaware of their condition.

Science News Letter, June 27, 1936

ENTOMOLOGY

Pacifist Bees Bred In English Zoo

"PACIFIST" bees, that use their stings only under the most extreme provocation, have been produced by special breeding methods at the Clifton Zoological Park in Bristol, England. Further efforts are being made to perpetuate the breed and to make them even more loath to unsheathe their natural weapons.

Science News Letter, June 27, 1936

CHEMISTRY

New Type Molecular Film Is Announced

PRODUCTION of a film—chemical, not cinematic—one hundred times thicker than most chemists thought could exist is announced by Prof. William D. Harkins and Dr. Robert J. Myers, of the University of Chicago.

Films possible in surface chemistry have been thought to be not more than one molecule thick. The Chicago scientists have announced that their films are from two to 100 molecules thick.

Significance of the discovery is that scientists hope to find more facts about the films which cover many parts of the human body and brain.

"Without these films and related membranes life would be non-existent," said Dr. Harkins. "The motion of the muscles, the behavior of the nerves and the brain itself, and the characteristics of the blood and all the cells of the body are dependent upon the action of such films."

Science News Letter, June 27, 1936

BACTERIOLOGY

"Odor of Earth" May Be Possible New Perfume

PERFUMES of a rustic tang, bearing such rural names as "Odor of Earth," "New-Cut Wood," or perhaps going across the Channel into "Terre Sillonneé," are made a possibility by the discovery of special microorganisms that are responsible for the characteristic scents of fresh-plowed fields in spring, of earth after strong rain in summer, or of freshly felled trees. The microorganisms were discovered by Dr. A. Raistrick, working at the Rothamsted Experimental Station at Harpenden, England.

A distinct field of "costume perfumes" is suggested by the possibility of propagating these organisms in pure culture and making use of their scent. Milady might well wish to use something distinctive with her tweeds; or she could add a scented persuasion when she writes a note inviting friends to come out to her country place.

Science News Letter, June 27, 1936

ACOUSTICS

Science of Sound Yields Hints for Language

THOSE who would create a universal language should take account of the new science of acoustics. Such is the suggestion of Dr. Vern O. Knudsen, acoustic expert of the University of California.

Apparently little or no attention has been paid to the question whether the words of Esperanto or other artificial languages are readily understandable in spoken form. In view of the vast amount of time wasted in retarded telephone calls and acoustic confusion in poor auditoria, the creator of a language should avoid the use of syllables frequently misunderstood.

Incidentally, English is probably not the best language in this respect. For example, the terminal consonant group "ng," so common in English, is perhaps the worst offender in the alphabet. In the Los Angeles auditorium tests, words ending in -ng were misunderstood more than half the time. In general, words ending in consonants are more likely to be missed than those ending in vowels. This fact often causes trouble for persons attempting to dictate strange material over the telephone.

Vowel Terminations Best

Dr. Knudsen's pioneer tests have been conducted so far only in English. It is already suspected that Spanish will prove superior, with its large number of words ending in vowels—Valencia, Santa Barbara, poco tiempo, etc. The Chinese language may prove to be still better. To be sure, western people are often highly amused to hear a Chinese express meaning by sounding a vowel in two successive pitch tones. This may, however, prove to be the most scientific way of making one's self understood under difficulties.

Perhaps Dr. Knudsen's commendation of vowel sounds explains the great popularity of the expression which Europeans call the "American double grunt" —that is, the "uh-huh" of every-day speech. While this expression has a semblance of consonant sounds, its real merit seems to lie in the inflection pitch and time placement of vowel sounds. By variations in these factors, astonishing differences in meaning are obtained under good acoustic conditions. In short, "uh-huh" is an idea easily put over.

Science News Letter, June 27, 1936

EVOLUTION

NATURE RAMBLINGS *by Frank Thone*

Doubts on Darwinism

PLANTS in their struggle for existence do not work along the lines laid down by Charles Darwin in his famous theory. So Dr. Frederic E. Clements, veteran ecologist of the Carnegie Institution of Washington, concludes as the result of many years of close observation on plants under natural conditions of competition.

This must not be taken as a repudiation of the whole idea of evolution. Darwin did not originate the theory with which his name has become so prominently associated. In one form or another, it has existed ever since the days of the ancient Greek philosophers. No less orthodox and prominent a churchman than St. Augustine upheld a theory that can fairly be called evolutionary.

Darwin's contribution to the history of evolutionary thought consisted in two ideas: first, that plants and animals continually produce small, chance, fluctuating variations; second, that competition, or the "struggle for existence," eliminated those variants that went in the "wrong" direction and permitted the better-equipped ones to survive.

Dr. Clements declares that his long observations in the field have not produced any consistent evidence in support of this twofold idea of Darwin.

He says: "The present studies in plant competition have clearly demonstrated that a limited supply of water or light will produce striking differences between individuals, not infrequently of the magnitude seen in varieties and species. This comes about in a single generation as a result of direct adaptation, but there is as yet no adequate proof that these new features can be fixed and hence transmitted to succeeding generations.

"Furthermore, no experimental evidence has been obtained that the minute fluctuating variations emphasized by Darwin are accumulated year by year until they constitute a new species, and it now appears improbable that this is the case, in plants at least."

Science News Letter, June 27, 1936

CHEMISTRY

Acid Treatment Increases Rosin-Turpentine Yield

ROSIN and turpentine yield per tree can be greatly increased by an acid treatment, Prof. Max Hessenland of Königsberg Technical Institute has discovered. The treatment is very simple: simply washing the V-shaped cuts on the trees with a 25 per cent solution of hydrochloric acid when they are tapped.

Science News Letter, June 27, 1936

ASTRONOMY

Jupiter Rides Above Scorpion

Interest in this Brightest Heavenly Object Will be Dimmed by Peltier Comet Visible to Naked Eye on 10th

By JAMES STOKLEY

THE most conspicuous object in the evening sky this month is the planet Jupiter. It appears directly south at the time for which the accompanying maps are drawn. (10 p.m., local standard time on July first, 9:00 p.m. on the 15th and 8:00 p.m. on the 31st.) Its brightness, greater than that of any star or planet, makes it easy to identify.

Although Jupiter may be the brightest stellar object this month, most star gazers will be more interested in the new Peltier comet, discovered on May 15, which will be visible to the naked eye on July 10. It will be the first comet thus visible in nearly ten years and astronomers believe it will be one of the most spectacular comet displays since famous Halley's comet of 1910.

Peltier Comet in Northeast

The Peltier comet will be in the northeast sky, approximately on a line between the eastern limits of the constellations of Cassiopeia and Cepheus on July 20. By August 1 it will have moved over eastward into the constellation of Pegasus.

Just below Jupiter is the familiar summer-time constellation of Scorpius, the scorpion. The red star to the right of Jupiter is Antares, which is supposed to represent the scorpion's heart. The hook-shaped row of stars below make his tail, and those forming a letter T on one side, to the right, are the claws. Ages ago the stars still farther to the right were the claws, but they were separated to form the group of Libra, the scales.

To the left of the scorpion's tail is Sagittarius, the archer, which bears some resemblance to the outline of a tea-pot, the spout to the right, the handle to the left. Above Jupiter is Ophiuchus, the serpent carrier, supposed to represent a giant holding a huge snake, while directly overhead is the figure of another giant, Hercules, the strong man of classical mythology.

In the southwest is the figure of Virgo, the virgin, in which shines the brilliant Spica, and above is Bootes, with Arcturus its brightest star. Another good way to find Arcturus is to look northwards. The familiar great dipper is in the northwest, the handle upwards. If the curve of the handle is followed to the south, Arcturus will be the first bright star to be reached. The lowest stars in the dipper, forming part of the bowl, are the famous "pointers" indicating Polaris, the pole star, which is close to the north pole of the sky, around which the heavens seem to turn once every day, actually an effect of the rotation of the earth from west to east.

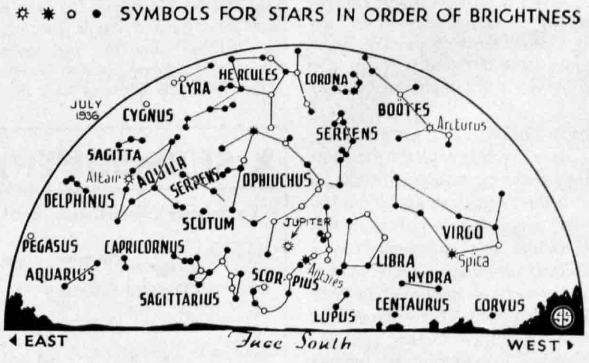
The Swan and the Lyre

High in the east is the northern cross, otherwise known as Cygnus, the swan. The cross is on one side, Deneb marks the head, to the north. Above it is Lyra, the lyre, with Vega, brightest star to be seen in the summer evenings, and a little farther south is Aquila, the eagle, with a star called Altair.

With a diameter of 86,728 miles, about eleven times that of the earth (7918 miles) the planet Jupiter, now so prominent in the evening, is the largest of the family of planets that revolve around the sun. In fact, it is so big that it contains more matter than all the other planets combined, yet it is far smaller than the sun itself, with more than 864,000 miles. Yet, even though it is so huge, it turns more rapidly than any of the other planets, because it revolves once on its axis in 9 hours and 55 minutes, instead of the 24 hours of the earth. The result is that there is considerable centrifugal force at the equator of Jupiter—the planetary material there is pushed farther away from the center than the poles, and when one looks at Jupiter through even a small telescope this elliptical shape, with the equatorial bulge, is easily visible. At the same time, surface markings can be seen, in the form of dark belts, parallel to the equator. These are not permanent, but change continually, and sometimes very rapidly. This seems to indicate that the surface of Jupiter that we see is not solid, but is probably a layer of clouds. There may be a solid core, perhaps of rock, and possibly around this is a frozen ocean, thousands of miles deep, because the temperature on Jupiter, more than five times as far from the sun as earth, is too cold for water to exist in liquid form. With water frozen solid, the clouds must therefore be different from the clouds of small water droplets that we have above us. Those on Jupiter seem to be frozen methane and ammonia, compounds that are gases here.

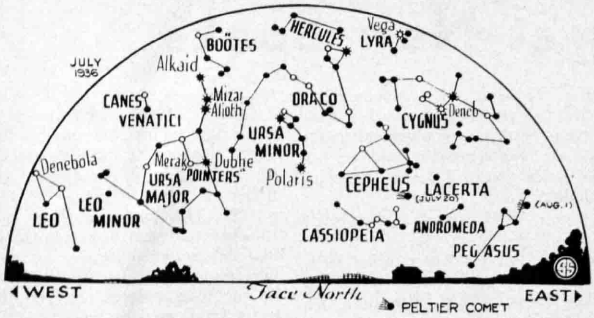
Jupiter's Great Red Spot

The presence of these gases above the clouds on Jupiter has been shown by the spectroscope. However, the changes that occur in the markings indicate that there is activity going on below the



SUMMER STARS

Spreading its great length across the southern skies is the summer constellation Scorpius, easily located because it is neighbor to the very bright Jupiter.



NOW YOU MAY SEE A COMET

Beginning on July 10, you will have a chance to observe what astronomers predict will be one of the most spectacular comet displays since the famous Halley's comet of 1910. This map will help you to locate the new comet and also the new nova which is between Cepheus and Lacerta above the point where the comet will be on July 20.

clouds. One famous marking is called the "great red spot." About half a century ago it was very conspicuous, then it almost completely vanished, only to return a few years ago. The belts themselves show many changes. Sometimes they are uniform, at other times they break up into smaller masses. On the whole, the surface of Jupiter offers a challenge to astronomers, and the planet is one of the most interesting objects in the sky.

Even with a telescope too small to show the belts of Jupiter clearly it is possible to see four of its nine moons—the four that Galileo discovered in January, 1610, when he made the first astronomical discovery with the telescope. Night after night these change. On Wednesday evening, July 1, for example, there will be two moons on one side, and two on the other. On the second, only three will be visible, two on the right, one on the left. The fourth on that evening will be in eclipse, behind Jupiter. On July third there will again be two on each side, but they will not be the same pairs as on the first. The next night there will again be three in view, one being in eclipse, and on the night after that there will be three in view again. This time, however, the missing one will be invisible, not because of an eclipse, but because it is in front of Jupiter and therefore difficult to observe.

Watching Jupiter's Moons

With a sufficiently powerful instrument, the shadow of this moon may be seen as a black spot on the planet's surface. If anyone were able to live in the part covered by the shadow they would be experiencing an eclipse of the sun. If anyone wishes to know in advance just how the satellites of Jupiter are to be arranged on any particular date, the information may be obtained from the American Ephemeris and Nautical Almanac, published each year by the United States Government, through the Navy Department. This is the astronomer's Bible, and contains many tables that he finds of constant use.

Though the sun's distance from the earth is about 92,900,000 miles on the average, it varies during the year. On January 4 it was closest, then we were separated by only 91,338,500 miles. We were at perihelion, as the astronomer says. This month, on July 3, we are in aphelion, or farthest from the sun, which will then be 94,452,100 miles away.

The Straighter the Hotter

Offhand, one might think that cooler weather should come when the sun is at its greatest distance, and, as a matter of fact, the intensity of the radiation falling on an average square foot of the earth's surface is less this month than it was in January. However, for us in the northern hemisphere, the sun is much higher in the sky than it was six months ago: This means that its rays of light and heat fall upon us more nearly vertically and are more concentrated than in January. Then they reached us at a low angle, and the heat in a yardsquare beam was spread over much more than a square yard.

The moon also changes its distance, but goes through its cycle once a month instead of once a year. On Saturday, July 11, it is in perigee, or nearest the earth, only 229,700 miles from us. But on Saturday, July 25, it will be at apogee, 250,850 miles distant. From the beginning of the month until about July 5, the evenings will be moonlit. Again at the end of the month, from about the 24th, it will shine during a large part of the evening hours. On July 4 the moon will celebrate Independence Day by going into partial eclipse, as it partly enters the shadow of the earth. Unfortunately, however, it occurs while the moon is below the horizon for people in the United States and Canada, and we shall not see it.

Science News Letter, June 27, 1936

MEDICINE

New Disease Discovered, Glands Believed Cause

A NEW disease in which the patient's upper eyelids were thickened, rigid and stood away from the eyes, shielding them somewhat like lowered awnings, is described by Dr. J. N. Roy, professor at the University of Montreal (*Canadian Medical Association Journal*, June).

Besides the strange condition of the eyelids, the patient's head was larger than normal, his ankles and wrists were enormous, his fingers and toes were short and very thick, and the skin of his face was thick and fell into deep grooves. His general health was good and he had only consulted a physician because his eyelids drooped so far over his eyes that they interfered with vision. X-ray pictures showed an unusual change in the structure of almost all the bones in his body.

Dr. Roy attributes this strange new malady to disturbance of the endocrine glands, probably of the parathyroids and the pituitary.

Science News Letter, June 27, 1936

First Glances at New Books

Psychology

ELEMENTS OF PSYCHOLOGY—Knight Dunlap—*Mosby,* 499 p., $3. Very definitely not designed for hopeful halfbacks who want to tackle only "snap" courses, the new Dunlap text will reward the industrious and retentive-minded student with a knowledge of basic psychology on which he can confidently depend, both as foundation for more advanced study and as stuff to build into his own way of living. Prof. Dunlap has always been alertly modern, but he has never been "moderne"; he has no use for fads and faddists, and in several places he pays them his salty disrespects.

Science News Letter, June 27, 1936

Physics

SCIENCE IN THE WORLD OF WORK—Frank R. Deming and Joseph T. Nerden—*McGraw-Hill.* Vol. 1, Applied Mechanics, 206 p., $1.28. Vol. 2, Applied Physical Science, 282 p., $1.48. General science for use in technical trade schools. Emphasis throughout is placed on the necessity of making the student think of science in terms of real life rather than in the usual forms found in standard texts.

Science News Letter, June 27, 1936

Physics

FOUNDATIONS OF PHYSICS—Robert Bruce Lindsay and Henry Margenau—*John Wiley,* 537 p., $4.50. Here is a book which strikes a new field in science books, standing midway between the "popular" book of physics of the Jeans and Eddingtons of the world and the rigorous, difficult theoretical physics texts. The authors have done a highly commendable job of describing the meaning of physical symbols, mathematics necessary in physics and various concepts which underly physical science. The book should be required reading for every candidate for a doctorate in physics. And it will also help those scientists who already hold their Ph.D.'s.

Science News Letter, June 27, 1936

Botany

BOTANY—J. Ben Hill, Lee O. Overholts and Henry W. Popp—*McGraw-Hill,* 672 p., $4. A very solid, even somewhat formidable-looking book. The student who goes through it certainly ought to come out on the other side with at least some knowledge of the subject! A very considerable part of the book is devoted to a rather full presentation of the various phyla of the plant kingdom. Probably, by judicious selection, the teacher could make this book effective in two courses: a general course of one or two semesters, and an advanced undergraduate course in plant morphology.

Science News Letter, June 27, 1936

Agriculture

GROWING PASTURES IN THE SOUTH—Joseph F. Combs—*Univ. of North Carolina Press,* 270 p., 76 illus., $2. Grass and mat legumes form an important factor in the economic and social reconstruction of those parts of the South where impoverished soil has meant reduced community income and lowered standards of living. New plant species and improved agronomic techniques are making possible improvements that have long been desired but until now have been impracticable. This book tells why and how.

Science News Letter, June 27, 1936

Meteorology

DROUGHTS OF 1930-34—John C. Hoyt—*Govt. Print. Off.,* 106 p., 20c. The droughts of the first half of the present decade will doubtless go down as classics of American meteorological history. The present condensed summary of extreme conditions, besides being very useful in a number of scientific and applied fields, gives us some reason to pride ourselves over our own stamina. It was a tough time, and most of us survived it!

Science News Letter, June 27, 1936

Medicine

A BASIS FOR THE THEORY OF MEDICINE—A. D. Speransky—*International Publishers,* 417 p., 45 pl., $4. This book is too technical for lay reading but medical scientists will be interested in the views and research of the author, who is director of the department of patho-physiology of the All-Union (Soviet) Institute of Experimental Medicine.

Science News Letter, June 27, 1936

Aeronautics

THE BOYS' BOOK OF MODEL AEROPLANES, Revised Edition—Francis A. Collins—*Appleton-Century,* 262 p., $2.

Science News Letter, June 27, 1936

Soil Conservation

LITTLE WATERS: A Study of Headwater Streams and Other Little Waters, Their Use and Relations to the Land—H. S. Person, E. Johnston Coil and Robert T. Beall—*Govt. Print. Off.,* 82 p., 15c. The greatest mischief done by runaway waters is not in huge spectacular floods like those that visited Pittsburgh and New Haven last spring, but by the little streams that run through every farm, even by the tiny temporary runnels that live only for the length of a rain or thaw. When the land has been stripped and abused they are at once the destroyers of soil and the feeders of the disastrous floods in the valleys below. This pamphlet vividly outlines the course of the malady, tells causes, suggests cures.

Science News Letter, June 27, 1936

Economic History

COAL THROUGH THE AGES—Howard N. Eavenson—*American Institute of Mining and Metallurgical Engineers,* 123 p., illus., $1.50. History of coal and coal mining from the earliest Greek references down to 1935 as contrasted with the geological history of coal. The author contributes the book as one which will interest younger people in the fascinating story of the black mineral and quite rightly states, "the writer knows of no other such comprehensive review in one place."

Science News Letter, June 27, 1936

Medicine

ON PERCUSSION OF THE CHEST; Being a Translation of Auenbrugger's Original Treatise—John Forbes—*Johns Hopkins,* 31 p., 75c. A reprint, illustrated, of a translation of a medical classic which would be a welcome addition to any physician's library and would make an especially appropriate gift for the young graduate about to study medicine.

Science News Letter, June 27, 1936

Mathematics

TABLES OF DERIVATIVES FOR DAMPED VIBRATIONS—W. E. Milne—*Oregon State College,* 48 p., $1.

Science News Letter, June 27, 1936