BIOPHYSICS

Each Bone Has Own Sound When Tapped, Russian Finds

EVERY BONE has its own distinct sound when it is tapped, Dr. T. J. Ariev of Leningrad has found. He has proved this by oscillograms taken of several important large parts of the human skeleton. The oscillograms are written records of the sound waves set in motion by the bone when tapped. These written records make possible a much more accurate comparison of the varying sounds of tapped bones than could be obtained merely by listening to them.

The sound of the bones is naturally affected by age, sex, race and individual peculiarities of body build. Whenever there is an inflammation of the bone or it is cracked or broken, the sound undergoes a marked change. This may be readily brought out by comparing the tones of healthy and suspected bones, as practically every bone of the human body has its counterpart, it is claimed.

Dr. Ariev's observation was pronounced a valuable medical advance by a special committee of health authorities and physicists which was set up to examine his method and results. According to Prof. A. F. Joffe of the Russian Academy of Science, who was on this examination committee, it is quite feasible to construct a simple acoustical apparatus for investigation of bones which would produce records of sounds, just as an X-ray machine makes X-ray pictures.

Science News Letter, April 15, 1933

ENTOMOLOGY-PSYCHOLOGY

Scientists Listen In On Katydid's Hearing Apparatus

A KATYDID'S KNEES, which are that creature's own peculiar "ears," have given men the novel experience of listening in on the insect's world of sound.

The story of how scientists have tapped the hearing circuit of katydids and crickets by placing electrodes against the knees of the insects, amplifying the responses picked up, and listening in on these in an ordinary telephone receiver, was related to the meeting of the New York Branch, American Psychological Association, by Drs. E. G. Wever and C. W. Bray, of Princeton University.

The resulting sound was always a sort of "shushing" noise, regardless of the source of the sound. Human speech lost all characteristic qualities except the rhythm, which was preserved.

But the katydid is apparently deaf to the ordinary sounds of our world and hears principally those that are beyond the reach of human ears. Sounds of frequency below 800 cycles produced no response even when very loud. But the higher frequencies, even up to 45,000 cycles per second, were picked up. The limit of man's hearing is usually about 20,000 cycles—the shrillest note of the peanut whistle.

Results for the cricket were similar, except that his hearing range is apparently between 500 cycles and 11,000 cycles, considerably lower than that of the katydid and with an upper limit considerably below that of man.

Science News Letter, April 15, 1933

MEDICINE

Doctors Warned About Use Of New Pain-Relieving Drug

DILAUDID, new pain-relieving drug which has been hailed as a substitute for morphine, should be used cautiously until it has been studied further, doctors are warned.

The warning appeared in a report by Dr. Nathan B. Eddy of the University of Michigan to the American Medical Association. The report was published in the Association's Journal at Chicago. Dr. Eddy has been engaged in studies of narcotic drugs in an investigation sponsored by the National Research Council.

Dilaudid is known chemically as dihydromorphinone hydrochloride. It is closely related to morphine, and was developed in German research laboratories. It has been described as more potent in relieving pain than morphine, and less objectionable in other ways. Notably, it has been said to be less likely to lead to habit-formation than morphine.

In a review of the subject, Dr. Eddy found that cases of addiction to dilaudid have been reported. Experimental studies of the drug have not yet established whether or not it is habit-forming. Investigation of this point is now being made by Dr. Eddy and associates.

Meanwhile, he suggests that physicians should avoid prolonged use of the drug until more is known about its pharmacologic properties.

Science News Letter, April 15, 1933

IN SCIEN

ENDOCRINOLOGY

Anti-Growth Factor Found In Parathyroid Glands

DEFINITE EVIDENCE of an anti-growth factor in the parathyroid gland has recently been found by Drs. C. J. Eastland, N. Evers and J. H. Thompson, working at Kings College, London, and the Royal College of Surgeons, England.

These investigators treated fresh parathyroid gland in a special way and obtained an extract which had a harmful effect on the growth of rats, they reported to the *Biochemical Journal.* Six rats were used as controls, and six were given daily injections of a small measured amount of the extract, other conditions being the same for both groups of rats.

The factor which retarded the growth was destroyed by treatment with hydrogen peroxide.

Science News Letter, April 15, 1933

PHYSIOLOGY

Hormone Treatment Halts Premature Aging of Women

SLIGHTLY reminiscent of the Steinach rejuvenation operation and the fiction of Gertrude Atherton's much-discussed novel, *Black Oxen,* is a treatment for premature aging in women which two St. Louis physicians are now studying. The treatment makes use of one of the very modern medical agents, a hormone called theelin.

Symptoms of premature old age in five women, following surgical removal of certain organs which had become diseased, were relieved by treatment with theelin, Drs. August A. Werner and W. D. Collier reported to the American Medical Association. In most respects the patients had the feelings and bodily functions of normal women.

These cases seem to bear out the theories regarding the function and possible clinical use of theelin held by the original discoverers and investigators of this potent hormone.

Science News Letter, April 15, 1933

CE FIELDS

BOTANY

Nitrogen Lack Makes Bog and Desert Plants Alike

WHY PLANTS growing in bogs, where there is always plenty of water, should have thick, tough, leathery leaves protected against evaporation, resembling desert plants in this respect, has long been a puzzle to botanists. A German botanist, Dr. Kurt Mothes of the University of Halle a. Saale, believes he has found a possible key in the lack of nitrogen in bog water and soil, rather than anything to do with the water relationship itself.

He was struck by the fact that of all bog plants the sundews, which capture insects with the sticky fingers on their leaves and thereby get plenty of nitrogen, are the least desert-like in their appearance and structure. The same might be said of two groups of American insectivorous plants, the Venus flytrap and the pitcher plants.

To test the possibilities of his hypothesis, Dr. Mothes grew tobacco plants, which normally are anything but desert-like, in culture solutions containing plenty of other mineral nutrients but lacking in nitrogen. They responded by developing thick, tough, leathery leaves, with small stomata or "breathing pores" and other characteristic structures of desert plants.

The full technical discussion of Dr. Mothes' experiments is published in the *Biologisches Zentralblatt.*

Science News Letter, April 15, 1933

BOTANY

Narcissi Merit Recognition As Proper Easter Flowers

See Front Cover

EASTER has always been a festival of flowers. Indeed, one of the reasons why the early missionary Church found it comparatively easy to get its converts to adopt this holy day was because most of them already had a holiday at the same season—a celebration of the returning sun, when they garnished houses and temples with fresh flowers.

There is, however, a curious inappropriateness in the almost universal use nowadays of the long-throated lily species that has by common consent come to be known as the "Easter lily." In the first place, Easter is not its natural time of blooming; it has to be forced to get it into flower at this time of year. Moreover, it is not native to the lands of the Easter tradition, but comes from Japan; it was quite unknown to Western horticulture until after the commercial opening of that still pagan land.

Much more appropriate, it would seem, would be the recognition of the narcissi to a leading place in the Easter floral display. The various species of narcissus flower early, even in our northern lands, and many of them are ready for Easter without forcing. The best-known of them, like the paper-whites and the poet's narcissus, are native to the Mediterranean lands, the fountain-head and early home of the Christian tradition.

The photograph of the paper-white narcissus on the cover is the work of Cornelia Clarke.

Science News Letter, April 15, 1933

ASTRONOMY

Jupiter To Hide Star In Rare Occultation

A VERY RARE form of eclipse, the hiding of a star by the planet Jupiter, will occur early Friday morning, April 21, Dr. L. J. Comrie, superintendent of H. M. Nautical Almanac Office in London, has announced. Dr. Comrie stated that the prediction has been made by Arthur Burnet, and that the disappearance of the star will be visible over the entire North American Continent. Because it will be invisible in Europe, he has requested that American Astronomers make all possible observations of it.

The star, which is only known by its catalog number, B.D. plus 8 degrees 2456, is of the ninth magnitude, well below the limit of naked-eye visibility. However, it can be seen in moderate sized telescopes. At Cambridge, Mass., said Dr. Comrie, the disappearance of the star will take place at 1:38 a. m., eastern standard time. At the Lick Observatory, Mt. Hamilton, Calif., it will occur at 1:43 a. m. Dr. Comrie said that on account of the very slow motion of Jupiter through the sky, the times predicted are subject to an uncertainty of a few minutes.

Science News Letter, April 15, 1933

PSYCHOLOGY

Indiscriminate Punishment Aids Learning of Rats

PARENTS and teachers agree that giving Johnny a candy or other reward every time he gets the right answer will hasten his learning. And many think that punishment, whether by spanking, scolding, or in other ways, whenever he gives the wrong answer is also effective. But what happens when both reward and punishment are served out indiscriminately for both types of action?

A partial answer to this question may be deduced from the report of S. Diamond, of New York University, at the meeting of the New York Branch, American Psychological Association.

Rats were placed in a box similar to that used by psychologists for testing the ability of animals to learn which of two paths is the correct one to lead them to a reward of food. But in this case both paths led to the food. And whichever path the rats chose, they met with punishment in the form of a harmless but uncomfortable electric shock.

These punished rats tended to select one or the other of the paths and form the habit of going in that direction much more quickly than did rats who were not punished.

Indiscriminate punishment hastens learning, is Mr. Diamond's conclusion. But, of course, it does not guide it.

Science News Letter, April 15, 1933

PLANT PATHOLOGY

Hop Crop Menaced; New Kinds Sought

HOP GROWERS of Oregon, Washington and California, promised their first real prosperity since the Volstead blight struck their industry, have suddenly had to face another and even more serious foe in the fungus disease known as downy mildew. The mildew seems to have come in through British Columbia, and has assumed the proportions of a major plague within the past three years.

A search is being made for resistant plants of native and foreign stocks, from which hybrid strains can be bred that will defy the disease while they mature their crop. In the meantime, fungicide sprays are being used for the salvation of existing crops of non-resistant hop strains.

Science News Letter, April 15, 1933