SCIENCE NEWS

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SOME PAPERS READ AT THE BOSTON MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

FROM the pituitary gland located at the base of the brain come two hormones which produce opposite effects on the sex glands of mature fowls, it appears from the report of Drs. Oscar Riddle and his associates, Ernest L. Lahr and Dr. Robert W. Bates, of the Carnegie Institution of Washington. One of these hormones has for some time been known to cause rapid and premature growth in the sex glands of young animals. Dr. Riddle and associates have now found that small amounts of this same hormone cause enlargement of the ovaries of mature hens, also. Another hormone of the many produced by the pituitary gland, the one which stimulates milk production in mammals, has the reverse effect on the ovaries of mature fowls, causing a marked decrease in their size. The same opposite effect of these two hormones was observed on the sex glands of adult doves, both male and female. These observations reinforce other evidence previously obtained, indicating that not one but two hormones of the anterior pituitary are concerned in regulating the size and activity of the sex glands and that the normal adult size of these glands can be increased or decreased by giving the appropriate hormone.

BABIES are not just little men and little women, and when they grow up the process is one of development and transformation as well as of growth. These conclusions, reached as a result of careful anthropological studies, were reported by Dr. Charles B. Davenport, director of the department of genetics, Carnegie Institution of Washington. The fact is that the infant is not at all merely a small man, but the two stages are remarkably unlike; strictly, the infant does not merely grow into a man, it *develops* into a man. The head end of a baby's body is more developed than the tail end. A baby's head is nearly two thirds as big around as an adult's, but the lower part of his body and his legs seem almost rudimentary compared with those of an adult. His shoulders, while relatively large, are quite different in form from those of an adult. As the baby grows, the shape of his shoulders changes so as to free his arms for the most varied movements, and the main wings of his pelvis undergo great development to provide for the muscles that hold the human erect. His chest changes from a nearly circular cylinder to the flatter, broader adult shape. His legs grow relatively faster than his trunk, first the thigh, then the lower leg, and then the thigh takes another spurt, so that the child is transformed from a romping to a walking animal. At the same time his foot is transformed from an ape-like type to one better fitted for walking on two feet.

PLANTS and animals living on the bottom of the sea along the coast have as complex relationships with each other as folks in cities, or men, animals, trees and lesser plants in the country. Professor W. C. Allee, of the University of Chicago, described some of their societies of the deep and outlined some of the problems of their "sea-sociology." Sometimes an otherwise peaceful community of animals, as oysters or other shellfish, will be domineered over by devouring starfishes and their relatives—marine racketeers. Sometimes a given area will be so thoroughly burrowed by sea worms that nothing else can live there—rough analogy with the incoming of groups of foreigners considered "undesirable" by other dwellers in an urban region. Sometimes physical causes, such as the incoming of too much fresh water or drifting silt or sand, will cause radical changes in the subsurface population. Even earthquakes, changing the level of the sea bottom and hence the light intensity, oxygen concentration and other factors, affect the course of life "in the waters that are under the earth." So complex are the relations of the living things with each other and with their non-living environment that Professor Allee suggested an almost equally complex name to indicate them: "geo-bio-ecology."

A SIMPLE wick-like rod that can be depended on to keep your plants watered with a minimum of attention from yourself was described by Professor B. E. Livingston, of the Johns Hopkins University. The "wick" consists of an exceedingly fine-grained artificial filtering material which resembles a very porous sandstone. One end extends upward a couple of inches through an opening in the bottom of the vessel containing the growing plant, the other is immersed in a reservoir of water. The wick carries water up into the pot, where the soil tends to settle firmly against its upper end, maintaining a good capillary contact. Plants can be kept growing indefinitely in this way, the only attention necessary being an occasional refilling of the reservoir.

THOUSANDS of growing root tips have been kept alive and increasing rapidly for over a year, without any attachment to their parent plants, and fed only from an artificial liquid medium, at the Rockefeller Institute for Medical Research, New York. The experiment was described by Dr. P. R. White, before the meeting of the American Society of Plant Physiologists. The roots used were those of tomato plants. The growing tips were cut off and placed in the nutrient liquid, where they continued to increase and multiply in a manner reminiscent of the famous chicken-heart tissue culture started at the same institution many years ago. One of these tomato-root isolations, Dr. White reported, has produced approximately 20,000 growing points, from an initial fragment less than half an inch long. The ratio of the original bit of material to the resultant growth is expressed by the fraction written as 1 over 10 followed by nineteen zeros, so that there is no doubt that the new growth was made by the roots out of the material present in the liquid medium.

EVIDENCE that the invisible, filter-passing virus that causes mosaic disease in tobacco is concentrated in the living protoplasm of the cells, and not in the watery contents, or cell sap, has been obtained by Professor B. M. Duggar and Dr. L. G. Livingston, of the University of Wisconsin, who reported on their researches before the meeting of the Botanical Society of America. They used a special apparatus with microscopically slender hollow points, to penetrate certain large hair-cells on the surface of tobacco leaves and extract various parts of their contents—an almost incredibly delicate operation. The virus seemed not only to be concentrated in the protoplasm, but to be especially strong when the cells contained special structures known as "inclusion bodies," which can often be demonstrated when the disease is present. It is suggested that the inclusion bodies at least accompany the development of the virus agency in high concentration. Clear demonstration was obtained that the inclusions are fragile structures, readily breaking into granules when touched with the micropipette.

LOCO-WEED, prime trouble-maker to western horses and cattle, is poisonous to much smaller animals as well, according to a report presented before the entomologists. G. H. Vansell and W. G. Watkins, of the U. S. Bureau of Entomology, working at Davis, Calif., told how they have found dead and dying bees in and near the flowers of the spotted loco, one of the more abundant and poisonous species of the weed in certain parts of Nevada. Before the death of the bees was traced to this poisonous plant, it was blamed on a new and mysterious disease, which discouraged many of the Nevada bee-keepers and caused others to move their apiaries out of the region. Loco poisoning of bees, Messrs. Vansell and Watkins found, is most common after the first cutting of the alfalfa crop and before the second growth of this principal honey plant produced a new crop of flowers, especially if sweet clover is scarce and the loco-weed plentiful. Sometimes weather conditions cause a scarcity in the loco-weed, after which the bees do not die off so rapidly.

ITEMS

SUN-SPOTS of the old cycle which is now dying still persist in passing across the face of the sun. Astronomers of the Carnegie Institution's Mount Wilson Observatory report that a group of sun-spots containing from five to sixteen individual spots has been visible on the sun's disc during the past few days. The first sun-spot of the new cycle was seen on October 10. Astronomers can tell whether the great disturbances in the atmosphere of the sun that constitute sun-spots are of the old or new cycle by their magnetic polarity. The magnetic orientation of the spots changes at the time of sun-spot minimum, which is occurring now. The persistence of spots of the old cycle after the appearance of spots of the new cycle is not unusual.

GAMMA ferric oxide, which is chemically like common iron rust but physically unlike it because it responds to the pull of a magnet, is being used at Yale University in the study of the makeup and migrations of blood cells. When it is injected into the blood stream, it is promptly taken up by the corpuscles, and its subsequent location, learned by magnetic search, shows where iron is stored in the body. Among the other things being investigated by this new method is the function of certain hitherto puzzling cells of the liver. Gamma ferric oxide has long been known as a chemical curiosity, but it was not until Dr. Oskar Baudisch, a research fellow working with Professor Treat B. Johnson, began making it up in quantities sufficient for research purposes that its possibilities as a scientific tool began to be appreciated.

A HUGE airplane photographic map, 40 by 24 feet, of the Navajo and Zuni Indian lands in New Mexico, Arizona and Utah has been contracted for by the Department of the Interior. It is to be used as a basis for the better regulation of grazing practises, which have already gone to severely damaging excess in many small areas and a few large ones. Airplanes making the photographs will fly at an altitude of over 20,000 feet, taking more than 4,500 individual photographs with a special four-lens camera. The separate pictures will be fitted together into a single mosaic map. Total cost of the work will be about $77,000; but if the work were done by ground parties it would cost more than $500,000.

TEMPERATURE inversion, that is, warmer air as one goes higher, is a more common phenomenon in winter than has been suspected, air-line pilots have been discovering lately. On one day recently, when the ground temperature was only 10 degrees above zero, pilots encountered a temperature of 40 degrees at 4,500 feet. On the same day, pilots leaving an 8-degree temperature at the Cheyenne, Wyoming, airport found a 36-degree temperature at an elevation of 9,000 feet above sea-level. Reports on air temperature and other weather conditions are given by the pilots every twenty minutes, and are coordinated with information collected and supplied by the far-flung airway weather observation system of the U. S. Weather Bureau.

Die Umschau, German popular science weekly, presents in brief summary form a comparison of the products of the U. S. A. and the U. S. S. R. The Soviet Union with approximately the same population as the United States and 50 per cent. greater area, produces 20 per cent. of the world's breadstuffs and 80 per cent. of the world's flax. The U. S. A. produces only half as much grain and practically no flax. In other products the United States leads. Figures are: Cotton, U. S. A., 60 per cent. of the world's supply, U. S. S. R., 5 per cent.; coal, U. S. A., 35 per cent., U. S. S. R., 5 per cent.; petroleum, U. S. A., 60 per cent., U. S. S. R., 10 per cent.; pig-iron, U. S. A., 25 per cent., U. S. S. R., 15 per cent. The United States produces about 80 per cent. of the world's automobiles, while so few are manufactured in Russia at present that they hardly figure in the percentage column at all. In timber production, the two countries are on an even footing, each cutting 15 per cent. of the world's annual supply.