SCIENCE NEWS

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A MALE TUMOR HORMONE

EVIDENCE that male human beings, under certain conditions, will produce large amounts of a hormone identical with that occurring in the body fluids of women during pregnancy was presented at the recent meeting of the American College of Surgeons by Dr. Herbert M. Evans, professor of biology at the University of California.

Dr. Evans stated that with the collaboration of Dr. Miriam E. Simpson he had been able to demonstrate that when the male sex glands are invaded by tumor, a hormone is produced which reacts exactly the same on other animals as "prolan," the hormone produced in women during the development of the child embryo. In other words, the rapidly proliferating tumor cells lead to the same result as the proliferating cells of a foetus, although one occurs in the male and the other in the female.

This determination, it was pointed out, indicates the necessity for extreme care in measuring the strength of hormone dosage. When experiments on the hormone from males with tumor of the gonad were first started it was believed that this substance was far stronger in its effects than "prolan" from pregnant women. The conclusion was that it compared in strength of effect with the sex stimulating hormone from the anterior lobe of the pituitary gland or the hormone from pregnant mares.

However, suspicions were later aroused as to the accuracy of the unit measurements commonly used in hormone administration. Careful checks were made and these revealed that when care was taken to equate the unitage of "prolan" and the hormone from males with tumor of the gonad, the effects were identical. With the cooperation of Drs. Horlein, Schulemann and Laqueur, of the chemical laboratories of the Interessen Gemeinschaft at Elberfeld, Germany, it was shown that both hormones led to the same stimulation of the ovaries in immature rats. It was found that when immature female rats were given doses of either hormone in amounts between 5,000 and 20,000 units, ovaries of 200 or more milligrams in weight were produced.

A re-check of the comparative effects of the two hormones on pigeons indicated that in this case also the true unit value of "prolan" was determined it yielded the same gonad stimulation as the newly-obtained hormone from men suffering from the disease, teratoma testis. The effect of the two hormones is also the same when administered to rats lacking the pituitary gland, both male and female.

In conclusion, Dr. Evans said, "Ovarian weights will increase fairly rapidly following injections of the pregnancy hormone prolan in doses of 50 to 100 times the minimum rat unit. Very slight increases occur as the dose is increased up to 5,000 rat units. But when the dose is raised to 10,000 or 20,000 units, the ovaries increase to giant size, comparable to that achieved by administration of the male tumor hormone or ordinary doses of extracts from sheep pituitary glands. In every case the male tumor hormone shows its close relationship to the female pregnancy hormone prolan."

STRATOSPHERE AIR

TINY evacuated glass vials the size of medicine droppers are being used to trap samples of the air 13 miles in the stratosphere, according to the report of Professor F. A. Paneth and E. Gluckauf appearing in the current issue of *Nature*. The evacuated glass tubes are sent aloft from the upper air section of the Kew Observatory on small sounding balloons; broken at a predetermined height, they catch a sample of the atmosphere and then are sealed up again after fifteen seconds.

The object of the tests is to check the kind of gases which make up the stratosphere at heights where the compositions will be fairly stable and not disturbed by the winds creating turbulence at lower levels.

Extremely sensitive chemical analysis is used to measure the amount of helium gas present in the sample, for the sample contains only a few cubic centimeters altogether. An accuracy of one per cent. in a total volume of two cubic centimeters is attained. The first finding of the work disclosed that at a height of 13 miles the stratosphere air contains eight per cent. more helium than at the earth's surface.

Because of the fact that air is a mixture of gases the composition of the atmosphere at great heights should vary with the altitude. The best way of checking this fact, according to Professor Paneth and his colleague, would be to measure by chemical analysis the hydrogen content of the air in the stratosphere. The proportion of hydrogen is too low, however, to enable the use of any present methods. The next best indicator possible is the helium content.

To reach altitudes greater than twelve miles with the equipment, weight must be kept down, and as a result only small samples of the air can be taken. The sample apparatus is dropped to earth on a small parachute. It is found that up to heights of 11.18 miles (18 kilometers) the mixing of the gases has not yet given place to diffusion but at 13.05 miles (21 kilometers) eight per cent. more helium exists than is found at sea-level.

Much more research is needed on the problem and six cubic centimeter samples are requested from workers in better climates in other parts of the world.

GREAT AGGREGATIONS OF STARS EACH LIKE OUR MILKY WAY

A DENSE cloud of island universes, each of them similar to our own Milky Way, but so far out in space that they can be seen only with the most powerful telescopes, has been located near the southern constellation Horologium by Dr. Harlow Shapley, director of the Harvard Observatory.

Evidence of their existence first appeared in the largest existing catalogue of external galaxies tabulated during the past five years by Mrs. E. M. Lindsay, of the Harvard astronomical staff. Almost all the 7,889 galaxies in the Horologium area contained in the catalogue were previously unknown, and quite understandably so, since nearly all of them are fainter than the fifteenth magnitude.

From a survey of the long-exposure photographs taken with the powerful Bruce telescope the observatory at Bloemfontein, South Africa, from which the catalogue was made, Dr. Shapley has estimated that the metagalactic cloud is populated about twice as densely as space in general. Several denser concentrations or clusters of galaxies within the cloud, he has estimated, are populated as much as three times as thickly as average space.

Just how thickly filled with galaxies this area is can be understood better from the fact that the 7,889 galaxies recorded in the catalogue are in an area covering less than one per cent. of the total sky. This entire area, according to Dr. Shapley, is "a congested region," one which, by his definition, contains one or more galaxies for every five thousand trillion cubic light years.

The catalogue is part of a general program for the surveying of external galaxies in progress at Harvard, two others having been published during the past five years for other regions of the sky. In all of them celestial bodies are classified according to position, brightness, diameter, form and structure.

Previous to this catalogue for the Horologium area, the largest ever made was the famous "New General Catalogue," published in Ireland fifty years ago, which contains tabulations for about 7,000 bodies. This earlier catalogue, however, contains almost exclusively objects brighter than the fifteenth magnitude and covers the entire sky, while the Harvard one is limited to a very small area and deals almost entirely with bodies fainter than this magnitude.

AN IMPROVED TELEPHONE TRANSMITTER

A NEW type of telephone transmitter for desk-type phones, which brings as much improvement in the art as all the previous developments in the last forty years, was announced at the Bell Telephone Laboratories, in New York, before the group of banking and business executives on the tour of leading industrial research laboratories of the National Research Council. Two thousand installations of the high quality, improved type phone are now being put into commercial operation for study in actual service, according to Harvey A. Frederick, engineer in charge of the development.

In a test demonstration the industrial and financial executives listened in on a phone conversation between two desk stand instruments. The average amount of line and room noise was then inserted in the circuit and the transmission gradually weakened until it was barely possible to hear what was being said. A further increase in the noise level was then made. With these unfavorable conditions, under which it was found impossible to understand the conversation, the new telephone set was switched in, and the listeners found they could again hear clearly.

Still using the new development set, normal noise conditions were reestablished and the listeners were shown what happens if the range of sound frequencies is varied. Lack of low-pitched sounds makes the talk seem thin and faint, while cutting out high-pitched sounds makes it difficult to understand.

In appearance the new set differs radically from previous types, for all parts of the telephone in a user's home are on the desk or table. The familiar black box mounted on the wall now serves as the base of the set and contains a more compact bell ringer, the induction coil and a quieter dialing device.

The transmitting unit is known as the capsule type. It is a simplified, compact adaptation of the costly radio microphone. No accessory amplifying equipment is needed, however. Its frequency range, Mr. Frederick explained, runs from the bass tones of the human voice, at about 150 cycles, into a treble pitch of about 5,000 cycles.

Over 300,000 installations of this new type of capsule transmitter have already been made in present hand-set type phones with the aid of an adapter. Less than one in a thousand of these have failed in service. So standardized is the transmission quality of the capsule type transmitter that the variation from one to another in energy characteristics is only one half a unit of sound energy—the decibel. The human speaking voice between different people, for comparison, may vary by 20 decibels, or a ratio one hundred times as great.

A BIRD-LIKE DINOSAUR

BONES of a "late-model" dinosaur, that lived some 120 million years ago, have been brought to the U. S. National Museum by Charles W. Gilmore, curator of vertebrate paleontology. Although its live weight was probably about three quarters of a ton, it was built very much along the lines of a running bird, and had bird-like feet with three toes each.

This modeling for speed and relatively light weight, Mr. Gilmore explains, may have been due to the need for greater speed in the later days of dinosaurian domination, when competition had become severe and race-survival was to the swift. The loss of two toes out of the standard set of five possessed by earlier dinosaurs was one important item in this evolution toward greater speed in running. The same thing has happened among running mammals, reaching an extreme in the horse, which has only one working toe on each foot.

Mr. Gilmore's find is important, for these bird-like dinosaurs were apparently never abundant. It is not yet known how complete the skeleton is; but it seems to be a much more nearly complete specimen than those now in museums, which are usually assembled from fragments of several different skeletons.

With the fossils of the bird-like dinosaur Mr. Gilmore found the remains of duckbill dinosaurs, horned dinosaurs, armored dinosaurs and extinct genera of turtles and crocodiles.

ITEMS

DISCOVERY of a large oval "bowl" where prehistoric America's exciting games were played 800 years ago has been announced by Dr. Harold S. Colton, of the Museum of Northern Arizona. The discovery was made in northern Arizona near Flagstaff, by a joint expedition of the museum and the Arizona State Teachers College, of Flagstaff, led by J. C. McGregor. The find surprises archeologists, because never before has it been realized that ball games—national sport of Mayas, Aztecs and

other Indians of Mexico—were popular over so wide an area of ancient America. The game court now excavated is an oval bowl about 100 feet long and 45 feet wide, with slightly pointed ends. The sloping sides, Dr. Colton said, must have been seven or eight feet high, and the floor was level. Entrances were in the north and south walls, and a goal made of four rocks in the floor was at the south end. The plan somewhat resembles ball courts used in prehistoric Mexico.

FLATHEAD chiefs in colorful regalia of feathers and buckskin have watched the Secretary of Interior, Harold Ickes, sign an important document. While news cameras flashed and clicked, the Government of the United States presented to the Flathead Tribe of Montana the first tribe constitution approved under the Indians' new deal. The document, prepared mainly by the tribe itself and accepted by popular vote five to one, gives the Flathead Indians the legal machinery for organizing their own group and taking over a large measure of power over their own affairs. All Indian tribes who accept the provisions of the Indian Reorganization Act, passed by the last Congress, may work out their own constitutions, and a number of tribes have been actively engaged in this task.

ANOTHER sinus, besides the ones already so well-known for the suffering they cause, can contribute its share of ails and pains, Dr. Chester H. Bowers, of Los Angles, reminded members of the American College of Surgeons. This sinus is known as the sphenoid. It is located far back of the nose, approximately in the center of the skull, lying close to the brain and perhaps in intimate relationship with half of the cranial nerves and important blood vessels. It is usually not involved in disease, but it may be the hidden cause of many disagreeable symptoms. Headache, reflex pain over a canine tooth, pain or continuous burning in the throat, pain in the back of the head or even in the ear are among the symptoms which may be traced to trouble with the sphenoid sinus. Involvement of this sinus may also interefere with vision because the optic nerve is separated from the sphenoid sinus or cavity by a very thin wall.

EROSION-CHECKING grasses and other plants that can fight the droughts, winds and occasional floods of the Great Plains area have been sought in Asia by three expeditions of the U. S. Department of Agriculture. Now, the explorers' work finished, the seeds and cuttings are being tested under field conditions at four stations in the West by agronomists. The expeditions were in Asia at various times during the past two years. One, under H. G. MacMillan and J. C. Stephens, collected in Manchuria. A second, under the direction of H. L. Westover and C. R. Enlow, traversed Russian Turkestan. The third, under Professor Nicholas Roerich, worked in northern China. The scientific spoils thus far checked number well over 2,000 lots of seed and planting stock, with some shipments yet to be accounted for. Among them are 798 grasses, 555 legumes and 889 miscellaneous items. By far the greatest number of packages received were in the Westover-Enlow collections.