SCIENCE NEWS

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MEDICAL PROGRESS

RECOUNTING the romance of modern medicine before an audience of more than four thousand doctors from all over the United States meeting in Atlantic City, N. J., for the annual seession of the American Medical Association, Dr. William D. Haggard, of Nashville, Tenn., newly installed president of the association, told how the last fifty years of medicine has witnessed more achievements of miraculous character than the five whole centuries preceding.

Enumerating some of the medical discoveries which have aided mankind he called anesthetics and antisepsis the greatest contributions, for they have made the achievements of modern surgery possible. Next to those, he considers the control of tuberculosis, yellow fever, typhoid and syphilis the greatest boon of medicine to the human race.

Although many diseases have been conquered and insulin has come to the aid of the diabetic patient, there are yet countless problems to solve. "There is yet no specific for pneumonia, which, with all the other acute respiratory diseases, destroys more lives every day than any other ailment. The causes of smallpox, measles, mumps, chicken-pox and the much-dreaded sleeping sickness are as yet undetected. Cancer, the most pitiless of all maladies, is our rebellious and still elusive foe."

Emphasizing the economic importance of being healthy, Dr. Haggard pointed out that the number of cases of sickness in the United States in a year is thirteen and a half million, and economically amounts to a loss of a billion dollars annually. The two hundred and twenty-five million sick days a year in the United States, estimated by Dr. Haggard, are equivalent to about two days of sickness a year for every person in the United States.

He urged the importance of preventive medicine and advocated for that purpose a survey of the apparently healthy, a "drive to treat the incipiently sick while they can be cured." "Medicine," said Dr. Haggard, "is the only profession which is literally and altruistically devoted to professional suicide, because it endeavors chiefly, not to cure, but to prevent disease."

THE TOTAL SOLAR ECLIPSE OF 1926

ALTHOUGH still studying photographs of the total solar eclipse which they made at New Haven, Conn., last January, Dr. John A. Miller, director, and his colleagues of the Sproul Observatory, at Swarthmore College, are getting ready to journey half around the earth, to Bencoelen, on the west coast of Sumatra, to observe the next one. This occurs on the fourteenth of January, 1926, and the path of totality, the narrow band in which the sun is seen completely obscured, passes over East Africa, Sumatra and the Philippines, so that the people who see it will be quite different from those who saw the last one, which passed over the most thickly settled part of the United States.

The personnel of the Sproul Observatory expedition, Dr. Miller announced, will consist, besides himself and Mrs. Miller, of Dr. Heber D. Curtis, director of the Allegheny Observatory, of the University of Pittsburgh, Mrs. Curtis, Professor Ross W. Marriott, Dr. Dean B. McLaughlin, both of Swarthmore College, and Adrian Rubel and Wilson M. Powell, Harvard students who accompanied Dr. Miller on his last eclipse expeditions to New Haven and to Mexico in 1923.

A camera 65 feet long, the same used in Mexico and Connecticut, will be the chief instrument. With it will be taken photographs of the solar corona, which can only be seen at the time of an eclipse. Two smaller cameras, of 15-foot focus, will be used to test the Einstein theory, and interferometers will be used in an attempt to detect motion in the corona. One will be operated by Dr. Curtis who will also operate the spectroscope which he used at New Haven to photograph the eclipse spectrum in infrared light for the first time. Dr. Miller expects to have the party in Sumatra by November 3, though he believes that it will only take about six weeks to get the apparatus in working order.

While the eclipse of last January was the only one to occur in the northeastern United States in many years, Sumatra happens to be unusually well favored during the first thirty years of the century. On May 18, 1901, one occurred of the unusually long duration of 6.5 minutes, as compared with 2.4 minutes for the one last January or 4.2 minutes for that next year. If the weather conditions are unsatisfactory in Sumatra, it will only be necessary for the astronomers to wait four years, for on May 9, 1929, still another occurs there, and that with a duration of 5.1 minutes. After that, however, Sumatra will not see another total solar eclipse until 1988.

A NEW STAR

FLASHING out from obscurity to a temporary brilliancy exceeding that of the Pole Star, a nova, or "new star" was discovered in the southern skies on May 25 by R. Watson, an amateur astronomer at the Cape of Good Hope, South Africa, according to an announcement by Dr. Harlow Shapley, director of the Harvard College Observatory. The nova is in the constellation of Pictor, the "Painter," which can never be seen from points north of the Tropic of Cancer, but which from New Zealand, South Africa and the southern part of South America, can be seen in a part of the sky as prominent as that occupied by the Great Bear for American observers.

While such new stars are not uncommon, an average of about eight or ten a year having been discovered since the Harvard Observatory, with the assistance of its southern branch at Arequipa, Peru, began to search systematically for them, one of the brightness of that in Pictor is rare. According to Dr. Shapley, it is the brightest that has been seen since August, 1920, when one appeared in the constellation of Cygnus, the Swan, or "Northern Cross." Nova Cygni III, as the astronomers refer to it, because

it is the third that has been recorded in that constellation, was of the 3.5 magnitude on August 20 when it was discovered, and on the twenty-fourth it had reached the second magnitude, but by September 10, it was again too faint to be seen with the unaided eye. Nova Pictoris is being anxiously watched to see if it continues to become brighter. Dr. Shapley stated that the Harvard branch station in Peru has been notified, as well as other observatories in Argentina, Chile, Mexico and Cuba.

The cause of a nova is still in doubt, but many astronomers believe them to be due to the collision of a star with another, or to its passage through a mass of nebulous material. In such a case the friction would generate a great amount of heat, and the star would become much brighter. This theory is given support by the fact that most novas are seen to be surrounded by nebulous material for a considerable time after their outburst.

EXPLODING METEORS AND LUNAR CRATERS

MILLIONS of meteors, hitting the moon with a speed of as much as fifty miles a second, and exploding with a violence greater than that of T. N. T., dynamite or nitroglycerine, were responsible for the multitude of craters that can be seen to cover the surface of our satellite, when viewed with a telescope or even a pair of binoculars, according to a new theory proposed by A. C. Gifford, of the Hector Observatory, at Wellington. The action of the meteors was much the same as that by which exploding shells produced miniature editions of the lunar craters in the battlefields of France, when earth thrown into the air by the force of the explosion returned to the ground to form in a ring somewhat higher than the surrounding plain.

These meteors were not greatly different from those that now reach the earth, but while thousands of them enter the earth's atmosphere daily, friction with the air is so great that most are burned up before they reach ground, and when this occurs at night, a "shooting star" is the result. The few that do land have been so greatly slowed down that they can do little damage. Since the moon has no appreciable atmosphere, they hit the lunar surface with their full speed, frequently of 40 miles a second. "With this velocity," says Mr. Gifford, "if the meteor is stopped within one tenth of a second, it will penetrate two miles into the surface. In this time it is changed into a gas, but confined temporarily in a severely limited space. The pressure is so intense, the expansion so rapid, that it is instantaneously shattered and ejected by an explosion five hundred times as powerful, and much more rapid than that which would result if an equal mass of dynamite were exploded in a cavity within the lunar crust."

As further evidence in support of his theory, Mr. Gifford has calculated the shape of a crater formed in such a way, and his figures closely resemble those of actual craters seen on the moon through a telescope.

AMERICAN WILD SHEEP

THE wanderings of the animal inhabitants of the vast area of northern Asia during many thousands of years were outlined before the meeting of the National Academy of Sciences, by Professor Peter P. Sushkin, of the Russian Academy of Sciences.

During recent geological time migrations in Asia have been conditioned by two main events: first, changes in land level, causing the disappearance of a former inland sea, and second, the glacial period. About half the species of animals in northern Asia range clear across the continent as well as into northern Europe; the others are more local in their distribution, and it is notable that their development has progressed much further on the great central highland than it has in the great valley that was once a sea floor.

Professor Sushkin advanced the opinion that the wild sheep of Asia and America had a common origin. He believes that the American mountain sheep originated in Asia, somewhere in the region in which Colonel Roosevelt is now hunting their relatives, that during the mild-climate times that preceded the great ice age a branch of the family migrated to America over the land connection that once occupied what is now the Bering Sea, and that the coming of the glacial period forced these emigrants to travel southward on this continent.

HYBRIDS IN PERU

THE age-old effort of the Incas to interbreed different species of their native wool-bearing animals and thus obtain types combining several desirable qualities seems at last to have met with success—at the hands of the white man, however. Two hybrids have been produced at the experimental farm at Puno, Peru, under the direction of Colonel R. J. Stordy, director.

One of these newcomers is the "huarizo," a cross between the llama and the alpaca, the other the "paco-vicuna," a cross between the domestic alpaca and the wild vicuna. Whether these animals will be fertile and reproduce is not yet known, according to Wilson Popenoe, agricultural explorer, who has recently returned to Washington from Peru.

The llama, one of the ancestors of the new "huarizo," has for centuries been the cow and the horse and the "ship of the Andes" to the people of Peru, Bolivia and Ecuador. It is the largest of the four cameloid types of wool-bearing animals native to this region. It is said that centuries before the European conquest it had been domesticated from the wild huanaco by the Indians who prized it as a gift from the gods, without which there would be no existence, trade or travel.

Huge numbers of these animals were said to have existed at one time. Spanish chroniclers say that 300,000 of them were used to carry the gold and silver from the mines of San Luis Potosi to the waiting galleons of the Spaniards. To-day the number is not so great, but these animals, nevertheless, are the only means of transportation, and sources of food and clothing to the large part of the population.

Although it is the largest of these animals, the llama's flesh is not exactly a delicacy, and its coat of wool is coarse and rough. The alpaca, the other parent of the "huarizo," is smaller and has a wool whose quality is prized in commerce. By interbreeding these two it was

hoped to obtain wool that was finer than that of the llama and in quantity greater than that of the small alpaca.

But the rarest of all the small humpless camel-like animals of the Andes is the vicuna. Graceful as a gazelle, it is still wild or half wild and inhabits the high mountain ranges and inaccessible places bordering the region of perpetual snow. It was a prize to the hunters seeking it among the rocky precipices of Ecuador, Peru and Bolivia. Its wool and skin have always been considered of special value, a poncho of vicuna being worth a mint of money to-day. This and the fact that it had to be killed to obtain its wool have nearly caused its extinction. There are now stringent regulations for its protection.

This graceful animal, although wild, has an amount of curiosity that often made it the victim of the hunter. It can be captured and tamed and even domesticated to some extent. By crossing this animal with the alpaca it is hoped to obtain a type that will be easily domesticated and propagated in large numbers. The wool if obtainable in quantities should have a great commercial value, for that of the alpaca is noted for its lightness and strength and its ability to take dye, while that of the vicuna is unsurpassed in softness and beauty.

THE DEVELOPMENT OF CHILDREN

If your baby girl at eighteen months yells when you want her to comply with some mere adult wish or your three-year old pushes you away and says, "No, I won't," do not be alarmed at this show of obstinacy. Periodic spells of resistance to even pleasant suggestions are part of the normal development of the normal child, according to Dr. D. M. Levy, psychiatrist, formerly with the Illinois Institute for Juvenile Research, who has made an extended investigation of resistance in children.

Babies of less than six months tend to be calm, even when just awakened or interrupted at meal time, says Dr. Levy; but, from six months on, perverseness increases until the third year, often with a minor high point of resistance at the eighteenth month, which is particularly apt to appear in the case of girls. After the third year resistance gradually decreases until the child at five years readily cooperates with an adult who knows how to make himself agreeable. Girls, on the whole, show more resistance than boys.

In the course of his work Dr. Levy examined many babies and soon found that his associates agreed with him that three-year olds showed the greatest resistance to any kind of examination, even to the "games" which compose the mental test for a youngster of that age. To check up on this general feeling, Dr. Levy devised a series of simple tests which could be given uniformly to children from six months on, to test, not mentality alone, but degree of resistance in complying with the directions given. Seated on the mother's lap, each child is tested as to its ability to grasp objects in front, above and behind the head. Placed on the floor by the examiner, the baby is next tossed a ball with instructions to catch it, and then is asked to throw the ball back to the examiner. The baby is then placed on a table by the examiner and further tests given. All the time the baby is closely observed as to its behavior, and careful notations made in writing together with the age of the baby and other data needed. The number of tests the baby refuses to perform gives the degree of resistance.

To check the results, a number of children were examined in their own nursery under favorable conditions—and the percentage of resistant babies remained the same. Personal dislike for the examiner was tested by having the mothers ask their children to perform the tasks—and the babies were still contrary. Therefore Dr. Levy concluded that gradually increasing resistance to the third year, followed by a decrease, is normal in the growth of a child's personality.

ITEMS

Tests of the Japanese vaccine for protection against rabies carried on by Dr. H. W. Schoening, of the U. S. Department of Agriculture, indicate that the serum is a valuable protection, but that its degree of success seems to depend on the strain of infective virus against which it is compelled to work. Apparently, the invisible, ultramicroscopic organism that causes madness in dogs exists in varieties as distinct as those found in larger plants and animals, for tests made upon vaccinated dogs with virus from different sources gave varying results. In one test, five out of six vaccinated dogs inoculated with rabies died of the disease; in another three out of ten, while in a third experiment none of the dogs contracted the malady. Unvaccinated animals, inoculated with the disease at the same time, as "controls" or checks, suffered more severely than those previously treated with the protective serum. One of the experiments showed a larger fatality among the vaccinated than among the unvaccinated dogs, but this was due apparently to a spoiled lot of vaccine. Dr. Schoening states that the method has already been widely used in Japan, and that among over 30,000 dogs vaccinated only one death has been reported.

Birds have a sense of taste very similar to that of human beings, but not so acute, according to the recent investigations of a German ornithologist, Bernhard Ransch. He tested canaries for their sensitiveness for sour, salty, bitter and sweet substances by giving them solutions of acetic acid, common salt, powdered aloes and cane sugar in their drinking water. The lowest limit for acetic acid, a 1½ per cent. solution which appears to us only slightly sour, was refused by the birds after one or two trials. Common salt was refused in a 5 per cent. but accepted in a 2 per cent. solution, which still appears to us as distinctly salty. The birds were less sensitive to the bitter test; while refusing a strong solution they readily took a weaker one, the bitterness of which would seem unbearable to us. This lack of sensitiveness for pronouncedly bitter substances may be explained by the fact that seed-eating birds are accustomed to many kinds of bitter seeds. The sweet taste of a 20 per cent. solution of cane sugar apparently produced a positive sense of pleasure.