SCIENCE NEWS

SCIENTIFIC EXPEDITIONS FROM WASHINGTON

Science Service

SCIENTISTS are scattering to the wild and waste places of this hemisphere in their annual intensive attempts to wrest from nature additional secrets of the past. Archeological, ethnological, biological and geological expeditions are daily leaving Washington to take the field in lonely canyons and wide places of our own west and unsettled regions of Canada, South and Central America.

Dr. Charles D. Walcott, secretary of the Smithsonian Institution, and Mrs. Walcott are just leaving for British Columbia where they will hit the trail. He will study the rocks of the Rockies and read the stories written in fossils; she will paint the wild flowers and measure the melting of the glaciers.

C. W. Gilmore, Smithsonian paleontologist, has already begun to dig up gigantic fossil reptiles found near Jensen, Utah.

Sylvanus G. Morley, of the Carnegie Institution of Washington, is continuing his reconnaissance of the wilds of Yucatan and Guatemala, in his effort to locate further remains of the Maya, said to have been the most highly developed of America's ancient people.

Dr. J. Walter Fewkes, chief of the United States Bureau of American Ethnology, has just gone to the Cumberland Valley, Tennessee, to inspect excavations being made in Indian mounds there by W. R. Myer, archeologist. From there he will go to Colorado, Utah and New Mexico for further investigation of the abandoned apartment houses of the cliff-dwellers who once lived there.

Neil M. Judd, archeologist in charge of the National Geographic Society's explorations in Chaco Canyon, New Mexico, has already resumed work on Pueblo Bonito, one of the largest of the prehistoric Indian community dwellings.

M. W. Sterling, ethnologist of the United States National Museum, is preparing to leave for Mobridge, South Dakota, from which place he will proceed to another ancient Indian village site where skeletons, implements and other relics of an extinct people have been found.

To get information about the manners, customs and languages of living but rapidly disappearing Indian tribes, a number of investigators are leaving for sections more or less remote from civilization.

Dr. Truman Michelson, ethnologist, left this week for Labrador to study remnants of the Algonquin Indians on the southeastern portion of that peninsula. J. N. B. Hewitt will visit Wisconsin, New York State and Ottawa, Canada, to conduct studies among the Iroquois and other Indians, and Francis LaFlesche will study the material culture of the Osage Indians of Oklahoma.

Animals as well as men of the past and present are also the subject of exploration. C. R. W. Aschemeier, of the United States National Museum, has left for the Amazon to collect exhibit specimens, especially of the porpoises living in South American rivers and believed to be closely related to the sea-going species familiar to ocean travelers. Arthur deC. Sowerby, under the direction of Robert S. Clark and Charles M. Hoy, are now in troubled China hunting big game and other mammals for the government collections.

STANDARDIZATION

Science Service

EVERYTHING from needles and frying pans, fountain pens and desk tops, to fence wire and tent canvas is provided for in a proposed uniform system of indicating sizes by a geometrical series of numbers being investigated by the American Engineering Standards Committee. F. J. Schlink, assistant secretary of the committee, states that this is the most far-reaching and fundamental engineering development so far presented to his organization for study.

Sizes of many articles in use to-day are based on chance or outworn tradition. Nail sizes, for instance, actually originated in the cost expressed in English pence of 100 nails back in the days when nails were made by hand smithing, at a cost having no relation whatever to prices now current.

According to the proposed plan, the size of the article would be based on some property or dimension bearing definitely on its serviceability. Nails should probably be sized by driving strength, which takes into consideration length and wire diameter together, while the sizes of fountain-pen barrels would be based on actual ink capacity.

The chief feature of the system, however, is that each standard size is larger than the preceding size, not by a definite addition, but by a fixed percentage.

For instance, in the case of shoes, a given size instead of being one third inch longer than the

preceding size would be a certain constant percentage longer. It is not the one sixth inch by which a shoe is too short or too narrow which makes it pinch, but the relation which that deficiency in length or width bears to the actual size of the foot being fitted. In large shoes, one sixth inch may be a satisfactory interval for comfortable fitting; while in a small shoe, say for a child's foot, one sixth inch above or below the proper size might be intolerable. This difference in length between the various sizes should not be constant all the way from the child's 4 inch shoe to the No. 12 adult's shoe which is 12 inches long, but should vary with the size; for most commodities a constant percentage increase over the preceding size will best serve the purpose. It is the homely idea of the inch on the end of one's nose, which is universally recognized as a bit awkward, though the same inch would be quite harmless when applied to larger objects.

Whatever the unit of measurement used in the different articles, all sizes of any given commodity would differ in a uniform and fixed proportion which would be represented by a series of numbers, say 10, 16, 25, 40, 64, 100 (each 60 per cent. greater than the preceding). By a simple shift of the decimal point a new series, 1.0, 1.6, 2.5 4.0, 6.4, 10.0, may be obtained, or again, 100, 160, 250, 400, 640, 1,000, providing for the very smallest or the very largest sizes for which there is any possible use. A freight car of 64,000 pounds capacity, or fence wire 64 thousandths of an inch in diameter, would thus alike be preferred number sizes. The series can start with any number and continue to the largest needed stock size, with additional intermediate numbers inserted according to a definite scheme, when needed.

The ease in designating a size which such a system affords may favor the general commercial use of uniform sizes for uniform purposes, with the enormous economies in manufacture and distribution that would result.

RACE HORSE ENDURANCE AND RED BLOOD CELLS

Science Service

THE reason that race horses have greater endurance than the average animal lies in the fact that they have a much larger proportion of red cells in the blood, according to Dr. Christian P. Neser, of the Division of Veterinary Education and Research at Onderstepoort, South Africa. Whereas the blood of a permanently stabled horse, which has practically no exercise, contains only about 23 per cent. by volume of red blood cells, some of the race horses when in severe training were found to have as high as 52 per cent. red corpuscles. Over half of the blood in such cases was made up of these microscopic red cells.

Dr. Neser, when making a comparative study of the blood of different equines, was puzzled over the marked variations in the proportion or erythrocytes—as red blood cells are technically called—in different animals. He could not correlate this condition with differences in food, age or sex, but did find, however, that all severely worked horses had without exception a much higher content of red blood cells than usual. The race horse, which was the most severely worked animal of any of those studied, had the highest content of red corpuscles in the blood, and, in these particular horses, this proportion was highest when it was in the height of training. Although horses, which had been bred for this type of service, always had a somewhat higher content of erythrocytes, this investigator found that the process of training was accompanied by a rapid increase in the percentage which continued until a maximum blood content was reached; this occurred when the horse was in full training.

This is just another illustration of the fact that the animal body when subjected to peculiar conditions adapts itself in a manner suited to the occasion. In this case the tissues, particularly the muscles, need oxygen faster than the blood normally supplies it to them. The erythrocytes, as is well known, function as carriers of oxygen and any great increase in these cells augments the oxygen carrying power of the blood; if this provision were not made, the muscles would not be able to stand the strain of racing on account of a lack of this essential constituent.

INHERITANCE OF MUSICAL ABILITY

Science Service

MUSICAL talent descends from parents to children in accordance with the known laws of heredity, according to the conclusions of two German scientists just reported to the American Medical Association by its Berlin correspondent. Professors Haecker and Ziehen, of the University of Halle, made an investigation for musical ability into the family histories of several thousand persons where one parent is musical and the other is not.

Boys are more musical than girls, they found, especially if their mothers had musical talent. The inheritance in that case seemed to go to the opposite sex, the girls of the family having no especial ability in music. Where both parents are musical the trait follows the regular laws of

heredity and 40 per cent. of the offspring have talent, 40 per cent. are somewhat musical, and 20 per cent. have little or no musical ability.

Children with marked inherited ability frequently exhibit it before the end of their second year. As might be expected, musical talent is usually discovered earlier if the parents are musical. Children of such parents can frequently sing correctly before they can talk.

Indicating that musical ability may develop in the absence of musical training in childhood, the cases of 46 composers are cited, 13 of whom had no opportunity to hear good music in their younger days.

Studying the relation between musical and other talents the investigators found that a gift for music is likely to mean the absence of a taste for mathematics, but to indicate in many cases a gift for drawing and for poetry.

PURE WATER IN NEW YORK STATE

EIGHTY-SIX per cent. of the people of New York State are now supplied with drinking water from public supplies and 73 per cent. of the population is served by treated or purified water, according to C. E. Holmquist, director of the Division of Sanitation of the New York State Department of Health, who has just completed a special investigation and report on the filtration and chlorination of the public water supplies of the state. Mr. Holmquist finds that 9,182,000 persons in New York State out of a total estimated population of 10,651,000 are now supplied with water from public water supplies and that 7,796,000 persons are served with treated or purified water.

The increase both in the number of persons served by public water supplies and those served by treated or purified water supplies has been marked during the past two decades, according to Mr. Holmquist's report. In 1906, when the Division of Sanitary Engineering was organized and supervision over public water supplies was commenced, about 6,000,000 persons were served by public water supplies and only about 700,000 persons in the state were served by purified public water supplies. It will be seen therefore that since 1906 there has been an increase of some 53 per cent. in the number served by public water supplies and an increase of over 1,000 per cent. in the number of persons served with water from purified supplies.

The improvements in the sanitary quality of public water supplies of the state appear to be reflected in the decrease in the typhoid fever death rate. The average death rate for the 22 year period from 1885 to 1906 inclusive was 23.6 and since 1906 there has been a marked and fairly uniform decrease in the typhoid fever death rate until 1922 when it reached the remarkably low level of 3 per 100,000. This rate compared with the rate before 1906 represents a saving of some 2,000 lives per year from typhoid fever alone.

That the installation of filtration and chlorination plants has resulted in decreasing the typhoid fever death rates, especially in places where public water supplies are derived from polluted sources, is further shown clearly by the experience of four typical cities; viz., Albany, Binghamton, Cohoes and Niagara Falls. A decided drop in the typhoid fever death rate occurred in each case immediately after filtration plants were installed. The average typhoid fever death rates in these cities before filtration and sterilization plants were installed were 89, 56, 99 and 132 per 100,000 of the population, respectively, and the average rates for these same cities for the five year period ending 1922 were 5.6, 3.7, 3.5 and 5.3 per 100,000, respectively. During the past year (1922) the death rate from typhoid in Albany was 0.9 and in Niagara Falls 3.6, while there were no deaths from typhoid in Binghamton and Cohoes in 1922. Although the water supplies of these cities are derived from large and, with the exception of the Binghamton supply, from grossly polluted rivers that receive large volumes of trades wastes and the raw sewage from communities numbering several hundred thousand persons, the death rates compare favorably with those for the rest of the state. Whereas other factors, such as improvements in milk supplies, have in all probability been instrumental in reducing the typhoid fever death rates in these cities, there seems to be no question but that the improvements in public water supplies have been the predominating factors.

GLASS METEORS

Science Service

POCKET-SIZED glass meteors, hitherto looked upon as the strayed waifs of science that no astronomer, geologist or other expert would admit to his department, were scientifically and publicly adopted into the distinguished family of heavenly bodies at the recent meeting of the Astronomical Society of Sweden, the adoption being sponsored by Professor A. Hoegbom, of the University of Upsala. The mysterious objects now proved to be of celestial origin are only an inch or two in diameter, consist chiefly of molten glass, are curiously marked, have been found in great numbers in Czecho-Slovakia, the East Indies and Australia, and under the name

of chrysolites or fulgurites have been sold as precious stones. They are now to be known as tektites.

Professor Hoegbom's solution of the mystery was interesting. All experts have agreed, he said, that tektites were formed by melting a mass. He then refuted the theory that they might have been formed by lightning, calling attention to the fact that no similar unmolten substance exists in the regions where the tektites are found. That glass-makers or chemists may have produced them is another theory. This also was refuted by proving that the existence of tektites dates back to the early stone age when primitive men used them for arrow heads, and that in those days men had neither the laboratory equipment nor the knowledge necessary for making these objects. On the theory, then, that tektites must have fallen from the sky, Professor Hoegbom undertook experiments to see what effect friction would have on molten tektite material shooting through the air with meteoric velocity, and was rewarded by the discovery that the curious patterns on these laboratory meteors were virtually identical with the tiny celestial bodies which have so long been a mystery.

FIREFLIES FOR THE WEST

Science Service

SCIENCE and the artistic temperament sometimes go well together. For example, the hard-headed scientists of the National Museum are going out on a still hunt for glow-worms so that a woman in Idaho with a love for the beautiful may enjoy fireflies in her garden on summer nights.

Fireflies, so abundant in the east, are unknown in nearly all the Far West. The Idaho woman, whose home is in Blackfoot, had seen them in the east and wanted them, so she applied to the National Museum. So Dr. J. M. Aldrich, of the museum staff, has been making nightly hunts on the lawns about the museum to ensnare any unsuspecting glow-worm which may be about and give him a long trip west.

Fireflies at this season are in the glow-worm stage; soft little crawlers, but carnivorous and subsisting largely on earthworms. They carry their own lights with them, but as yet have no wings. When transformed into their stage of existence for which wings are provided, they are the familiar fireflies of summer nights. But it is easier and safer to ship them as glow-worms than as fireflies.

Dr. Aldrich thinks that perhaps the reason why there are no fireflies in the arid and mountainous west is because the nights there are cool and the firefly thrives best where the evenings are warm. If that is correct, the Blackfoot woman may have her fireflies this summer, but they will not reproduce. In that case it is suggested that purveyors of garden seeds and supplies in the west add glow-worms to their stores. These might be bought with each year's seeds and would be guaranteed to light up a garden for one season.

ITEMS

Science Service

MEASUREMENTS of the heat received from the sun will soon be begun in Australia. The first solar radiation station is about to be installed there by representatives of the Smithsonian Institution which has been carrying on such work in Arizona and Chile for several years. A. F. Moore, director of the Mt. Harqua Hala radiation station, will sail from San Francisco on June 26 to set up the apparatus. Interest in solar radiation measurements began in Australia about two years ago when a group of scientists set out to find the means of setting up such a station. Means have recently been provided and the instruments will be set up by Mr. Moore at the Riverview College Observatory near Sydney. It is hoped later to establish a similar station in the arid interior region of the continent. Results from the Riverview station are expected to be of great interest and importance in comparison with the Smithsonian solar radiation stations in Arizona and Chile.

BROWN tail moths, the hairs from the caterpillars of which cause the extremely irritating human skin eruption known as "brown-tail rash," have suddenly shown an increase in New England after an almost complete disappearance, Dr. A. L. Quaintance, entomologist of the United States Department of Agriculture, declares. Similar measures to those used against the damaging gipsy moth will be used in an attempt to check the spread of this nuisance. The brown tail pest was brought to this country from Europe and first discovered at Somerville, Massachusetts, in 1897. In a few years it had spread throughout the New England states and become unbearable to the residents of many sections on account of its poisonous wind-borne hairs. Many thousands of acres of forests also were attacked by the insect and the trees defoliated. The prevailing winds have tended to cause the spread in a northeasterly direction into Canada, while disease among the insects in recent years apparently almost wiped them out. Now, however, they are again on the increase and causing trouble.