DR. FARRAND ADDRESSES SIGMA XI MEETING

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childhood, and smallpox. He showed that in the last twenty years infant mortality has been reduced over one-third; the tuberculosis death rate cut in half; typhoid deaths have been lowered by 80 per cent; diphtheria, scarlet fever and measles have been greatly reduced and smallpox practically eliminated.

The unconquered diseases on the other hand offer a more disquieting picture. The death rate from cancer has steadily increased during the last 20 years. In 1900 it was 63 per 100,000 population; in 1920 it had risen to 83.4.

Similar increases are shown in diseases of the heart and kidneys. Heart diseases now cause more deaths than any other disease in the United States, the rate being 186.2 in 1920 as compared with 128.1 in 1900. It was pointed out that with the control of communicable diseases of early life an increase in the degenerative diseases of later life is inevitable and that field is now an outstanding public health problem.

Dr. Farrand then outlined the organized movements in this country for the improvement of the public health and mentioned as particularly notable the Framingham demonstration under the auspices of the National Tuberculosis Association and the proposed demonstration of the Milbank and Commonwealth Funds of New York in the fields of tuberculosis and child health.

In closing his lecture, which drew an audience of well over 500 to Eastman Hall, Dr. Farrand urged the hearty support of all scientific men in every movement for the betterment of public health with which they might become acquainted.

EXPECT TO DECOMPOSE ELEMENTS AT CHICAGO

Hope to Separate Chlorine and Mercury into Ingredients

At a meeting here yesterday, Dr. R. S. Mulliken, national research fellow in physical chemistry at the University of Chicago, told members of the chemical section of the American Association for the Advancement of Science of partial but incomplete success in the effort being made in the Chicago laboratories to separate chlorine, mercury, and other elements into the different ingredients of which present-day chemistry believes them to be composed.

Recent chemical investigations have shown that many of the elements, hitherto believed to be indivisible, are really mixtures of two or more substances of practically identical properties but of different atomic weights. But the problem of separating the two isotopes, or substances of which an element such as chlorine is made up, is a baffling one, upon which many of the ablest chemists of the world are working. Dr. Mulliken stated that "Although prediction is not very safe, it seems unlikely that any short cut to the complete separation of isotopes in quantity can be found."

He discussed in detail, however, a number of methods that give promise of partial effectiveness, and stated that of these methods, "the application of the diffusion, evaporation, and centrifugal methods should give enough separation to make possible a comparison of the properties of isotopes."

"There are two kinds of questions," said Dr. Mulliken, "which are often asked by visitors to the 'isotope laboratory' at Chicago. Typical of the first is, 'How many isotopes have you separated so far?' 'None,' must be the answer. The only method which has been successful so far in isolating the individual isotopes is the positive ray method, which is the method par excellence for determining which isotopes are present in any given element. But the quantities of the separated isotopes obtainable are so excessively minute as to make rather hopeless any attempt to collect the products for examination. The practicable methods for the separation of isotopes in quantities sufficient for study are, on the other hand, all very incomplete in the separation effected, even after a number of repetitions. Thus quality must be sacrificed to get workable quantities.

"The second question asked is 'What is the use of separating isotopes, especially if the separation is very incomplete?' The most characteristic feature of isotopes is their likeness of behavior, but there are indications that this is not quite complete, and it is for the study of slight differences in properties that the separation, even though only partial, is chiefly worth while."

Used Movies to Coach Eleven

Perhaps one of the reasons for Yale's defeat by Princeton is the fact that shortly preceding the game, at a secret session just before the regular afternoon practice, Coach Roper of Princeton, used slow motion pictures of last year's game to point out to the squad, its errors.

RACIAL DIFFERENCES PRESENT BEFORE BIRTH

Progress in Fetal Growth in Man Described by Dr. Schultz

The progress of fetal growth in man was exhaustively described by Dr. A. H. Schultz of the Carnegie Institution of Washington before the anthropological section of the American Association for the Advancement of Science yesterday morning at Technology. Dr. Schultz gave the results of investigations on over 600 white and negro fetuses ranging in age from the ninth week of pregnancy to birth.

"Racial differences," said Dr. Schultz, "exist as early as a human form can be recognized; many of them become more marked with advancing development. These differences are, almost without exception, the same as those which distinguish adult whites from adult negroes. Secondary sexual differences could not be found in any of the body proportions; the general size of the male, however, is slightly greater than that of the female during the last two months of prenatal life.

"Individual differences," he continued, "are very considerable; variability before birth is at least as pronounced as in adults. This holds true not only for the actual measurements but can also be readily seen even in the smallest details, so that individual characteristics in facial expression, for instance, are present long before birth. Differences between the two halves of the body develop not during childhood, as is commonly assumed, but early in fetal life, and one finds these asymmetries essentially the same as those which are well known to exist in adults.

"Racial and individual differences as well as asymmetries seem to be very closely dependent on heredity. They certainly do make their appearance very early. Secondary sexual differences, only, develop later and then under the stimulation of the sex glands. The fact that racial differences exist even in very young fetuses cannot conclusively be interpreted as an indication of great antiquity of human races. The relatively young races of pug-nosed andlong-snouted dogs also show their peculiarities long before birth."

Outlining in detail the changes undergone by the human body during fetal growth, Dr. Schultz concluded with the statement that from early beginning to birth our body is in a state of constant change.

PROFESSOR FROM JAPAN PRESENT AT CONVENTION

Among the many noted guests at Technology for the seventy-sixth meeting of the American Association for the Advancement of Science, was Mr. Kunihiko Sukawa, scientist and professor of the College of the Imperial Government, a nautical college at Tokyo, Japan.

Mr. Sukawa visited the Institute last Tuesday and was shown about the buildings by Mr. William Jackson of the Intelligence Department. The party also included Captain Y. Naito of the steamship to Port Said, Maru, Captain H. Yokoyama of the steamship to Kupuku, Maru, and Mr. C. J. Hall of the Boston Chamber of Commerce, a member of the maritime association.

After a complete tour of the buildings, the party left for the Boston Chamber of Commerce, where the visitors were further entertained.

BUILD A FAMILY TRAIT ASSERTS DR. DAVENPORT

The statement that build shows itself as a family trait, and that build is controlled by secretions of the endocrine glands, so that the thing which is inherited is the peculiarity in the functioning of such glands, was made by Dr. C. B. Davenport, director of the Station for Experimental Evolution of the Carnegie Institute at Cold Spring Harbor, New York, when he spoke before the American Anthropological Association yesterday morning on "The Heredity of Build."

Build Due to Heredity

After explaining that build is a relation between weight or chest circumference and stature, which varies physiologically from birth to maturity, Dr. Davenport told how certain families are characterized by prevailingly slender, others by prevailingly fleshy, build. He went on to say that the index of build is at a maximum at or shortly after birth and reaches a minimum at 12 or 13 years and then increases, at first, rather rapidly and then very slowly to middle life. The course of change in index of build during development differs in different persons but frequently repeats the same course in brothers and sisters of a family. Build is, in many cases, controlled by the secretions of endocrine glands so that the thing which is inherited is the idiosyncrasy in the functioning of such glands. The hereditary factor for obesity is usually not a single dominant one, although in some cases, it appears to be; there are usually at least two and probably more hereditary factors involved in its determination.

SAYS TALL MEN DO NOT MAKE BEST SALESMEN

The popular theory that tall men and heavy men make the best salesmen was refuted by Dr. H. D. Kitson, professor of psychology at Indiana University, in a paper presented yesterday afternoon before the American Psychological Association here, in which he showed that a scientific study of the earnings of six hundred salesmen revealed the fact that their success was independent of their physical size.

The salesmen, said Dr. Kitson, represented footwear, a high-grade office specialty, and insurance. They were ranked according to commissions earned and then according to height and weight. No appreciable difference was found between the average height and weight of the salesmen in the most successful third and the least successful third. In the case of two of the three companies examined, tall and heavy men were no more frequent among the best salesmen than they were among the poorest. In the insurance company, though the extremely large men earned slightly more than the extremely small men, the most successful selling was done, on the average, by men of medium size, about five feet nine inches tall, with appropriate weight.

The popular theory thus disproved by Dr. Kitson rests, he said, on the idea that by mere animal bulk a large salesman can "impress" and "dominate" his clients as a small man cannot.

DR. HRDLICKA LECTURES ON PREHISTORIC MAN

Reaches Definite Conclusion As to Human Nature of Piltdown Jaw

Dr. Ales Hrdlicka, curator of the division of physical anthropology, U. S. National Museum, speaking on "Recent Discoveries of Ancient Man in Europe," before the American Anthropological Association and Section H of the A. A. A. S., told of his recent trip to Europe to examine the more recent discoveries of skeletal remains of early man, and expressed his confidence that he was "able to reach a definite conclusion and position as to the human nature of the Piltdown jaw," which has been so widely discussed by anthropologists. He studied thoroughly the Piltdown remains at the British Museum of Natural History.

Dr. Hrdlicka also satisfied himself, he said, on the more or less intermediary nature, between Neanderthal and the present type of man, of the Obercassel, the Predmost, and some other crania. In his quest he visited Spain, France, Germany, Moravia, and England. The examination of a large number of specimens and the visits to the sites where most of them were discovered, produced in him, he said, a deep impression on the one hand, of the growing importance and complexity of the whole subject, and on the other, of the vast amount of deposits in Western and Central Europe bearing remains of Early Man and giving great promise for the future.

ADAPTATION OF INSECTS TO SPECIAL CONDITIONS

Dr. Frank E. Lutz, curator of entomology at the American Museum of Natural History, New York, speaking at the symposimu on adaptation of insects to special environments, held by the Entomological Society of America here yesterday, said that before one can interpret adaptation he should have clearly in his own mind what he means by the term, and that he knew of only one clear case of real adaptation of insects for the pollination of flowers. This, he said, is the justly famous because exceptional case of the yucca moth, which apparently deliberately pollinates the yucca in order that the seeds upon which its larvae feed may develop.

Adapt Versus Adopt

The adaptation which the moth possesses for this purpose is a slight modification of the mouth-parts with which it carries the pollen. Here there is, on the part of the insect, apparently both intention and gain, said Dr. Lutz; but he continued that he sometimes wonders whether the moth is really doing more than merely using the structure she happens to have "very much as did a man I saw using his tobacco pipe as a hammer for the purpose of driving a pin into a bulletin board. If so, it would not seem to me to be a case of adaptation of a structure to a purpose but a case in which the insect adopted a structure for a purpose.

"It seems to me," concluded Dr. Lutz, "that in discussions of evolution we should keep clearly in mind the distinction between the two words **adapt** and **adopt**. The result might be far-reaching. For example, we might be tempted to say, as others have done, that grasshoppers, rabbits, and certain kinds of domestic cats do not have long hind legs because they jump but that they jump because they have long hind legs. There is a difference."

EXPLAINS FEATURES OF EARTH MARS AND MOON

Yesterday, speaking before the American Astronomical Society, Colonel John Millis, Engineers Corps, U. S. A., said that there seems to be a strong probability of some fundamental relationship among the phenomena that have produced the similarity of main features and markings on the surfaces of the earth, the moon, and Mars.

"An important point," he pointed out, "is the growth from the inside and the surface expansion that must result from the building up of a body by the accession of smaller ones from the outside."

The two best known theories to account for the surface features of the moon—volcanic action and impact by meteors—are both strangely plausible to a certain degree, considering their radically different character. Colonel Millis advances the idea that a reconciliation of the two may be possible, with a resulting general theory more complete and satisfactory than those that have been advanced heretofore.

MILLIONS OF ACRES OF U. S. LAND RECLAIMABLE

Speaking on the problem of land reclamation at a session on the principles of conservation, F. H. Newell, consulting engineer of the U. S. Reclamation Service, stated that there are in the United States perhaps thirty million acres of reclaimable land, which is suitable for the creation of small, self-supporting farm homes, to the number of over a half million.

"There are no obstacles in this reclamation," said Mr. Newell, "which have not already been overcome; there is a need for the increase, not merely in production on the lands already in use, but for the homes, for which larger needs grow imperative. It would seem to be the part of wisdom to extend the Reclamation Act, to permit the taking up of other lands in a systematic, orderly manner, for the benefit of the states and of the nation."

Mr. Newell stated that there are probably ten million acres of reclaimable public lands and of adjacent, unused private lands with fertile soil, which may and should be provided with an adequate water-supply. In other parts of the country there are bodies of land in private ownership, now unused, which may be reclaimed by drainage and other means, aggregating twenty million acres at a conservative estimate. In other words, said Mr. Newell, the total amount of reclaimable land in the United States reaches thirty million acres.