SCIENCE NEWS

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TESTS OF THE BLOOD OF NATIVES OF AUSTRALIA

DELICATE biochemical tests show a marked similarity between the blood of many of the very primitive natives of Australia and that of white men of the most advanced civilization, according to Dr. Clark Wissler, of the American Museum of Natural History, who has returned from what he calls "anthropological reconnaissance trip" to the southern continnet.

"I did not have time enough to get into the real interior of Australia," said Dr. Wissler, "so I confined myself to an effort to get into touch with what might be called 'borderland' natives—aborigines living near lines of travel, who have not yet been too thoroughly demoralized by their contact with civilization. I was fortunate enough to meet a whole tribe who had come down to visit a related group settled at a mission station near one of the great sheep ranches. Dr. J. B. Cleland, of the University of Adelaide, made the blood tests of several hundred of the natives, and Dr. R. H. Pullein made medical examinations.

"Though the blood tests require the drawing of only a single drop of blood, we could not be certain how the black men would receive our request for even that much, because of tribal taboos and superstitions. But Dr. Cleland explained to them that we wanted to see whether 'black man's blood all-same white man's'. The natives make a great deal of ceremonial blood kinship, and this appealed both to their curiosity and their pride; so they readily consented. It was found that very many of the natives had blood of types closely similar to that of white men."

The Australian natives, according to Dr. Wissler, have been rather maligned by travelers and earlier students of race questions. They are not, he states, as degraded a lot as current opinion would make them. He regards them as a primitive people who migrated into a very unfavorable country, where the struggle for existence is always severe, and who on this account have suffered from arrested development. On account of the climate they need no clothes and very little shelter, so that they have never developed the arts that other primitive peoples have. Because a large part of Australia is semi-desert the food problem is always pressing, making necessary the use of literally everything, even reptiles and insects, and forcing a nomadic life upon the people. The habits that have grown out of these necessities naturally do not make their possessors very attractive in the eyes of Europeans.

It is a mistake, however, Dr. Wissler thinks, to set the Australians down as a people of low intelligence. He points out that they have developed a most elaborate social code, and that their ability as trackers of game is almost uncanny. Such accomplishments are not attained, he says, by stupid men; within their limits the Australian natives are not to be despised.

Civilization, however, is ruinous to the aborigines, Dr. Wissler stated. The tribes that used to inhabit the eastern and southeastern parts of Australia have simply disappeared—died out; and those who now live in or near the cities degenerate rapidly. The governments of the Australian states now have regular officials whose business it is to guard the interests of the natives who are as yet unspoiled, and who cooperate with the mission stations in taking care of their material wants.

Not only the natives of the continent itself, but those of the former German possessions in the South Pacific, now mandated to the federal government of Australia, are the objects of scientific solicitude on the part of the government, Dr. Wissler said. In an effort to carry out the full spirit of the mandate idea, the Australian government is backing a thoroughgoing scientific investigation of both the peoples and the resources of the islands, in order if possible to develop both the people and the islands to their full possibilities and to avoid the period of ruinous exploitation that has usually followed the opening up of new territories inhabited by primitive races. At the University of Sydney a new department has been opened for the double purpose of training men for colonial service in the mandated islands and of carrying on research work in anthropology.

"The Australians realize the difficulties in their way," said Dr. Wissler. "They realize also the handicaps under which they are having to work, being a small nation and one hard hit by the war at that. But they are going at it with their eyes open and intend to make an honest effort."

RESEARCHES ON RICKETS

NEW cures have been found for rickets, a serious disease of children and young animals due to defective bone structure, in three substances commonly found in the bodies of all animals. They will be reported by Dr. Andor de Bosanyi in the next issue of the *Bulletin* of the Johns Hopkins Hospital.

Rats afflicted with rickets were fed on a diet containing hemoglobin, which is the red coloring matter found in blood corpuscles. When the diet contained from five to six per cent. by weight of this material the rats were quickly cured of their rickets.

A previous experimenter had stated that a substance very similar to hemoglobin would cure rickets when the subject treated was exposed to light. In order to determine whether or not light had any influence in the cure caused by the hemoglobin, rachitic rats were fed the diet containing hemoglobin for eight days in a light-proof compartment. There was found to be quite as marked healing as in the presence of light.

Adrenalin, a substance secreted by glands lying immediately above the kidneys, and known to be a very powerful heart stimulant, was next given to the rats. Very weak doses were given at first and the strength of the

dose increased until after four or five days the rats were taking at one dose an amount which would have proved fatal before. Healing of the rickets then began and proceeded rather rapidly until all symptoms disappeared.

The third curative substance was found in histamine, which is a decomposition product of proteins, those complex nitrogenous compounds that form the foundation of all living things. Rats on a histamine diet were cured of rickets in from six to eight days.

THE PARATHYROID GLANDS

A CONNECTION between the parathyroid glands, which are located in the neck, and the colon—the largest part of the intestine—is the latest discovery in the study of the important ductless glands, announced by Dr. A. C. Ivy, of Northwestern University.

The parathyroid has been one of the most baffling of the glands. But following the announcement, a year ago, of the preparation of a potent extract of the parathyroids, numerous physiologists have been finding strange regulative actions exerted by these small organs over the functioning of the human body. Moreover, diseases still incompletely understood are being connected with disturbances in parathyroid function.

The usual result of failure of the parathyroid, due to disease in man or produced experimentally in animals, is stiffening of the muscles, and often death. It is known that this stiffening can be relieved by baking soda or by calcium salts. More recently, the newly obtained parathyroid extract has proved effective.

Dr. Ivy outlined his evidence thus: "We removed the entire colon from dogs, and a week or two later the parathyroids were taken out also. In most of the animals the tetany, which usually follows simple parathyroidectomy, did not develop at all." Clinical application has been made of the discovery, Dr. Ivy told *Science Service*. "Colectomy is now being utilized for the treatment of certain mental diseases in humans." This unusual operation, while disagreeable, has already benefited individuals who would otherwise be confined to institutions, despaired of by medical science.

THE MILKY WAY

A HUNDRED years ago the English astronomer, Sir William Herschel, showed that all the stars visible in the heavens formed a system the shape of a watch or a grindstone, with the sun near the center. When we look out along the diameter of the grindstone we see a great mass of stars which appear like a continuous stream of light to the unaided eye. This is the Milky Way, or "Galaxy," as the astronomer calls it; and to learn more of it, and hence of the universe of stars of which the sun and its attendant planets form such a minute part, astronomers at the Harvard College Observatory are engaged in making an extensive series of photographs of these star clouds.

The method used depends on a fact discovered by Dr. Harlow Shapley, director of the observatory, that certain kinds of variable stars, which periodically diminish in brilliance and then grow bright again, change more rapidly, the greater their average brightness. This permits the astronomer to find out how bright they actually are. By looking at them with his telescope he can find out how bright they seem, and from the relation of the actual and apparent magnitudes he can find their distances. These stars, called Cepheid variables, are the ones being employed in the Milky Way studies.

"The Cepheid variable stars, and to a lesser extent the long period variables, afford valuable means of measuring great distances," explains Dr. Shapley. "With the perfection of photometric methods, it becomes possible to analyze any part of the stellar system in which variables occur, outlining its extent in various dimensions and the frequencies of certain types of stars. The problem of the structure of the galactic system has been of special interest to me for several years, and we have now perfected plans to place on a systematic basis one part of the analysis of the Milky Way.

"Three belts in the galaxy are being photographed continually at Cambridge and at our branch station at Arequipa, Peru, with exposures of sufficient length to show stars to the seventeenth magnitude. Each one of the two hundred fields, which completely cover the Milky Way, will be photographed over a period of four or five years from five to forty times annually. The accumulated material will be sufficient, in general, to determine the light variations of all variable stars to the sixteenth magnitude, or fainter. More than a hundred new variable stars have already been found during the early stages of this work. We are particularly able to do this, for we have suitable telescopes and an extensive collection of early photographs, and our staff has had long experience in measuring stellar brightnesses."

The first photographs ever made of stars in the United States were made at the Harvard Observatory in 1850, and ever since the work has been continued so that now the observatory has a file of thousands of plates which are not duplicated at any other institution.

Some of these are direct photographs, others are spectra, which reveal the composition of the stars and which were used in the compilation of the great Henry Draper Catalog. This monumental work lists over 225,000 stars, and gives their brightness, position and spectral type. Most of the work on it was done between 1911 and 1924, largely by Miss Annie Jump Cannon, the first and only woman to receive an honorary degree from Oxford University, in England, which was conferred in honor of her scientific achievement.

SUNSPOTS

THE large sunspot observed by many astronomers, both amateur and professional, during the last few weeks, and visible even to the unaided eye through smoked glass, will soon disappear, for on January 31 the sun's rotation will carry it around the western edge. There is good reason for supposing that it will be seen again, however. Since the sunspot was first seen last November, it has crossed the solar disc three times. Large spots usually survive for several months and sometimes as long as a year, Dr. Frederick Slocum, professor of astronomy at Wesleyan University, told a representative of *Science Service*.

Professor Slocum has been studying the sun and its activities at the Van Vleck Observatory of Wesleyan University since 1914, when he became director, and before that he made a specialty of solar studies at the Yerkes Observatory of the University of Chicago.

As the sun rotates on its axis once in about 25 to 38 days, a spot is carried across the disc from east to west, but the rotation is not uniform for all parts of the sun. Spots on the solar equator cross the disc most rapidly, indicating that for that part of the sun the rotation period is about 25 days, while near the poles of the sun the rotation is much slower.

"The large spot now visible on the sun crossed the central meridian when it was nearest the center of the disc, as seen from the earth, on December 1, December 28 and January 24. It was on the eastern edge of the sun on January 17, and having crossed the disc, it will pass around the west edge on January 31. This spot is in latitude 22 degrees north on the sun, and the group is 150,000 miles long; the umbra, or dark center, of the main spot being 20,000 miles in diameter, easily visible to the naked eye with smoked glass. Large spots usually last two or three months and occasionally over a year, but smaller spots may last only a few days."

Prominences, the red flames of hydrogen, which shoot out from the sun and are seen at the time of total eclipses of the sun, and at other times with the proper instruments, are related to the spots. When a spot is on the edge, the prominence is seen above it, but Professor Slocum does not believe that the large spot is related to the prominences observed by the Swarthmore College expedition to Sumatra during the eclipse on January 14. There is, however, a smaller group of spots in 20 degrees south latitude which was at the edge of the sun on January 14, and may have caused some of the eclipse prominences.

"The last sunspot maximum occurred in July, 1917," said Professor Slocum, "so if the period is the normal eleven years, the next should occur in 1928. Recent sunspot activity, however, indicates that there will be either an earlier maximum or one of greater intensity than usual."

RECORDING SPEEDOMETER AND AUTOMATIC GEAR SHIFT FOR AUTOMOBILES

AN automatic gear box for automobiles that will do away with all manual gear shifts and greatly simplify the art of driving, and a self-recording speedometer that will settle all arguments between supposed speeders and traffic officers are two of the latest Swedish inventions that have been perfected at Gothenburg, Sweden, at the plant of the S. K. F. Company.

The first contrivance is the personal invention of Dr. Sven G. Wingquist, founder of the firm and in 1921 named honorary doctor of engineering at the Stevens Institute of Technology in the United States. Exactly how it is constructed is still a secret, but from various patents granted him during the years he has been working on the problem, it has been inferred that the device utilizes both mechanical and hydraulic principles.

At any rate the new gear box has been installed in a closed motor car of American make and tested out in heavy traffic and under all possible driving conditions. It has also been shown to motor engineers in England, where it has attracted great attention. By automatically throwing into gear more and more wheels as the resistance increases and conversely taking out as the "load" grows less, it leaves the driver free to watch the road and regulate the speed only by means of the gas throttle and brakes which reduce the risk of accidents. It also is supposed to preclude the stalling of the engine.

The self-recording speedometer has been warmly recommended by the Swedish police authorities and for the purpose of testing its workings under various conditions it has recently been installed in five different kinds of vehicles, a taxi cab, a passenger bus, a large freight truck and a light one, and a private automobile. At regular intervals the records of these five motor cars will be inspected by the police and the wear as well as reliability officially determined. Chief of Police Haarleman, of Stockholm, is personally interested in these tests, as he maintains that in the case of accidents it is of the utmost importance to be able to determine exactly how fast each car had been traveling. So far the new speedometer has functioned perfectly in all tests.

ITEMS

BELIEVING that the fossil deposits in the raised reefs of Viti Levu, largest island of the Fiji group, may yield information in regard to its geological history and give science as well a few sidelights on the theory of evolution, Dr. H. S. Ladd, paleontologist and Yale University-Bishop Museum fellow for 1925–26, has left Honolulu for Suva and plans a six-months' stay in the southern archipelago. In addition to the modern reef around the border of Viti Levu, Dr. Ladd points out, there are two other series of elevated coral beds which were deposited in different geological periods and which are believed to have been raised by emergence centuries ago. These contain about 100 feet of fossil deposits. Fossils found in limestone usually consist of fish teeth and shells and it is expected that there will be varieties in the raised reefs of Viti Levu which are not the same as those living to-day.

DIRTY-FACED stone buildings that blush dark with shame between clean new structures can now be steam-cleaned so that they not merely look almost as good as new, but attain the mellow refined look of ripe age. The U. S. Bureau of Standards has conducted a series of tests to determine the best way of cleaning buildings. Old-fashioned methods of acid cleaning, sand blasting, scrubbing with soap powders and hand brushes are effective, but very slow and laborious. Live steam-cleaning was first tried on dirty stones in the laboratory, and then on a twenty-year-old accumulation of dirt on an old bank building in Baltimore. The results showed that this new method could be used rapidly with inexperienced common labor, although the cost was somewhat higher than for acid cleaning. This cost is expected to drop when the method passes the experimental stage.