

SCIENCE NEWS

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PAPERS READ BEFORE THE INTERNATIONAL PSYCHOLOGICAL CONGRESS

PROFESSOR IVAN P. PAVLOV, of Leningrad, described the close and strategic connection between the hemispheres of the brain which form the switchboard for the most complex conditioned, or learned, reflexes, and the sub-cortical part of the brain lying immediately beneath the hemispheres, which is the center for the most complex unlearned reflexes such as those dealing with food, sex and self-defense. Dr. Pavlov said:

"On the basis of the most recent experiments, I find it justifiable to separate the reflexes of these two centers from the rest of the nervous activity under the special name of the highest nervous activity." The study of the mutual relation of these two highest parts of the brain must become one of the most important problems of the highest nervous activity. The cortical conditioned reflexes are formed by means of the sub-cortical centers. A certain degree of excitability of these centers is the essential condition for the formation of the connection between cortical cells and sub-cortical centers. For instance, if an animal is already fed before an experiment, it is difficult or even impossible to form the conditioned reflexes on food. Professor Pavlov's experiments lead him to the conclusion that the strength and real significance of the activity of the brain hemispheres rests upon the activity of the centers just below the hemispheres. And, on the other hand, the hemispheres serve as regulators of the centers below. The cells of the brain hemispheres are continually protected against overstimulation. If a stimulus from without exceeds the maximum limit, inhibition sets in to prevent the brain cells from so intense a stimulation. The same sort of inhibition acts as a guard if the sub-cortical centers become over-excited and attempt to send in too intense messages of hunger, for instance, to the highest brain centers. Referring to the inhibition resulting from too intense excitation in the sub-cortical center, Professor Pavlov explained that "this fact is obviously a vital one, as it distorts the actual normal relations and furthermore gives a satisfactory explanation of hysteria."

PROFESSOR H. PIERON, of the Collège de France, stated that there is no pain sensation, though, when you cut your finger, you may be under the impression that you are experiencing a sensation of pain. Pain is really an emotional level which may be reached when certain specific sense organs are stimulated. The list of the five familiar senses, sight, hearing, smell, taste and touch, has long ago been expanded by psychologists to include the muscular sense, temperature sense, and sometimes several others, but if Professor Pieron's interpretation is accepted, pain would not be included.

PROFESSOR GOODWIN WATSON, of Teachers College, Columbia University, New York City, asked four hundred

students to tell whether they considered themselves happy or miserable, rating themselves on a scale of six degrees of happiness and unhappiness. Then he asked them to give a number of facts about themselves. As a result he found that the happy student is likely to be a man. He is likely to be above average in health; active in the life of the college; to believe himself able creditably to tell jokes, lead a discussion, act in a play, give a talk on sex, or administer a group of workers; to have a harmonious home; to enjoy his job; to like adventure. Intelligence appears to have nothing to do with happiness. Nor is much importance to be attached to race, physical disability, size of one's home town, financial, social or educational status of family, nor to personal estimates of ability at sports or at the various arts.

PROFESSOR STEFAN BLACHOWSKI, of the University of Poznan in Poland, questioned several hundred students at the university and has found that 54 per cent. of them have the inclination to count objects, to a greater or lesser degree. Professor Blachowski said that heretofore attention has been attracted chiefly to the extreme and abnormal cases, such as individuals who feel themselves compelled to count the steps they take or the words they hear, and who become enslaved to a habit that they feel helpless to shake off. Among the university students, counting was more prevalent among women than among men. About two thirds of the women had the inclination, as compared with less than half of the men. The objects the different students counted make a long list. Among the most popular were planks in the floor, wall-paper patterns, windows, pictures, buttons, stops during a walk, trees, autos, books on shelves, equipages at funerals, stakes in fences, houses from one end of the street to the other, letters, money and railway cars. The statement made by one student applies to most of the cases—"If I see something arranged in a row, pictures on the wall, for instance, I count them." Another student said that when he took a railway journey he always counted the stations and the houses and jotted down his precise observations in a diary. Since so many normal people occupy their minds with this form of thinking, Professor Blachowski believes that the matter should be studied more deeply than when it was merely supposed to be a phase of mental disease.

DR. GEORGE H. GREEN, of University College of Wales, speaking before the International Congress of Psychology, said that he found indisputable evidence that Welsh children do display racial prejudices. Books are of greater importance in forming the opinions of children regarding alien races than either school or religious instruction, he found. The rôles played by the Negro and Chinese in moving picture dramas have strongly influenced childish opinion regarding these races. But the movies do not seem to have affected the attitude of Welsh

children toward Americans. Facts collected regarding the influence of books, movies, newspapers, religious institutions and other agencies that shape children's opinions toward the races of the world can be used to make these agencies more effective in a constructive way, the educator pointed out.

THE child who persists in pushing his pen backhand style in spite of school fashions in penmanship is really seeking to attain a harmony of movement, in accordance with his own physical traits. Even though he may not be recognized as a left-handed individual, his desire to slant his writing backward is an indication of some left-handed or left-eyed trait, according to Dr. June Downey, of the University of Wyoming. Forty-five supposedly right-handed individuals who slant their writing back were studied. Some of these were left-handed children who had been taught to use the right hand. Some were ambidextral. Fully sixty per cent. of the group either had the left eye dominant, or else the two eyes were impartially depended upon. The backward slant of writing favored by left-handed persons and the forward slant more customary among right-handed persons suggest a centrifugal preference of movement.

CHILDREN take, on the average, twenty minutes to go to sleep. This is the finding of the mothers of one thousand children under eight years of age who have kept records in cooperation with Dr. Josephine C. Foster, of the Institute of Child Welfare at the University of Minnesota. Describing the sleeping hours of children, Dr. Foster stated that children less than six months old sleep about fifteen hours a day. Children seven years old sleep practically eleven hours. Averaging the records of children of all ages and records of all seasons of the year, the time required for dropping off to sleep was twenty minutes. Late hours, popularly associated with city life, do not affect city children. Country children went to bed later and rose earlier. This difference is particularly striking in the spring.

FEAR of the unknown plays a major rôle in the drama of every human life, according to Dr. L. Seif, of Munich. When a child begins to ask "why" at four years of age he is already trying to overcome the feeling of uncertainty and anxiety that human beings naturally hold toward what is strange. Strange experiences and objects are new, uncertain, dangerous, and such things are faced throughout life with anxiety. What is known, on the other hand, is safe and inspires confidence. If a child receives from his educators the right preparation—love, confidence, encouragement and suitable training for overcoming the difficulties of the strange—he then learns always better to transform the strange into the known. If a child is spoiled, he does not learn to deal courageously with the strange. His experiences are characterized by disappointment, anxiety and withdrawal. A pessimistic response to strangeness in life constitutes the basis of many mental and nervous disorders.

THE personal relation of the actor toward his rôles has been studied by Professor John T. Metcalf, of the University of Vermont. Professor Metcalf said that the actor enjoys his work when he is satisfied with his art, and his work is unpleasant when he feels his own shortcomings. The actress who weeps through a tragic love scene and has her audience weeping with her is probably thoroughly enjoying the evening's work. The actor who is so despicable a character that the audience yearns to come up on the stage and take a hand in his downfall probably has no feeling of repugnance toward his part in the drama. To what extent an actor feels the emotions he portrays has long been a matter of interest and dispute. Professor Metcalf concludes that the actor does imaginatively identify himself with some person and situation outside of himself. And the more fully he is capable of this, the more successful he will be in conveying the desired effect to the audience. But if he begins to experience the real sensations of anger or sorrow, he slips up in his art, for then he is behaving in a real and practical way instead of using his art to represent an imagined situation in the realm of unreality.

INTERNATIONAL COOPERATION IN THE STUDY OF PACIFIC PROBLEMS

SCIENTIFIC cooperation between all the nations whose lands border on the Pacific Ocean, toward the conquest of research and practical problems involving all of the sciences, was urged before the meeting of the Pacific Science Council in Java, from which Dr. T. Wayland Vaughan, director of the Scripps Institution of Oceanography, has recently returned. A number of resolutions putting various steps of the contemplated program into definite form were laid before the council and unanimously adopted.

One of the most ambitious of the projects is the surrounding of the Pacific with a chain of oceanographic institutions like the one at La Jolla, which will serve as headquarters for the laboratory attack on ocean problems and as bases for the operation of scientific expeditions in the field. The council recognized that the vastness of the Pacific precludes the possibility of any one institution, or any one country, taking over the whole of the work, and agreed upon the great desirability of international effort among all the governments concerned, with a co-ordinated program of work for all existing institutions as well as the new ones that may be established.

The recklessness with which hunters and collectors, both commercial and scientific, are depleting stocks of wild animals and plants, even in the prolific tropics, was specifically condemned in two resolutions, and conservational measures were suggested. Other resolutions proposed new lines of research, or commended those already in progress. Among these are the study of variations in terrestrial magnetism, of earthquakes in the region of the China Sea, of geological survey work in the same region, of investigations of the structure of certain typical coral islands, and of the mapping of oceanic depths by means of echo-sounding.

THE TEMPERATURE IN NORTHEASTERN SIBERIA

WHILE the western world is sweltering in heat waves, up in the northeastern corner of Siberia, Professor S. W. Obrutchev, of the Russian Academy of Sciences, and a party of fellow scientists are seeking colder places than any that have previously been reported to science.

Two years ago Professor Obrutchev, on another exploring expedition in the district known as Oimekon in northeast Siberia, found a region where comparative temperatures were lower than those at Verchojansk, up to the present time the acknowledged pole of cold. Verchojansk is roughly 500 miles distant in a northwesterly direction from the new cold spot and well within the Arctic circle. The new cold area lies slightly below the circle in the temperate zone.

When the explorers set out the first time they did not anticipate such extreme cold and had not included alcohol thermometers in their equipment. Consequently they could not take observations below minus 39.4 degrees Centigrade, or 48.9 degrees Fahrenheit below zero, the point at which the mercury thermometers froze. They stayed frozen, however, for twelve days, during a period in the month of November when, it was ascertained, such temperatures only lasted for two or three days at a time at Verchojansk. In October they found that daily temperatures averaged about nine degrees Fahrenheit below that of Verchojansk. The lowest cold temperature officially recorded for the latter place is 90 degrees below zero Fahrenheit.

If confirmatory data on these temperature relations are gathered on the present expedition, it will be apparent that the area of the world's coldest regions extends much farther to the southwest than was previously believed, a fact of considerable importance in making meteorological studies. Isotherms which were previously disposed in rings around Verchojansk must be transferred to include the region around the Okhotsk Sea.

ITEMS

SINCE November, 1928, eleven outbreaks of botulism have occurred in the United States that have been traced to home-canned food. In all, 35 cases occurred, of which 21 died. The frightful mortality of this disease makes extra precautions in canning vegetables and meat extremely advisable. The spores of the organism causing botulism can be killed only by long-continued heating, a condition that automatically condemns the cold-pack method in favor of a few years ago. Ten per cent. brine should be used for non-acid vegetables and meats, or else these foods should be boiled for some time after they have been removed from the glass jar in which they have been preserved, according to medical authorities.

INSULIN, which saves the lives of diabetic patients by ridding their blood of an overload of food in the form of sugar, is proposed by German prison physicians as a means of breaking the "hunger strikes" of prisoners, ac-

cording to an editorial note in *Kosmos*. Injected into the blood-stream of a healthy person, insulin acts in much the same manner as it does in a diabetic; that is, it reduces the amount of sugar. But if the amount of sugar is not excessive, it is reduced to the point of physiological starvation, and the "hunger striker" gets so sudden and violent an attack of the hunger he is striking for that he is unable to hold out, and asks for food.

THE Wisconsin Alumni Research Foundation has filed suit against the Solar Research Corporation and the Sargent Drug Company, charging infringement of patent rights which the foundation holds on the process of irradiating foods and medicines. The patent rights cover the process developed by Professor Harry Steenbock, of the University of Wisconsin, by which foods and medicines may be supplied with vitamin D, or their vitamin D content increased, as a result of exposure to ultra-violet rays. This vitamin is the growth-promoting anti-rachitic factor contained in large amounts in cod-liver oil and in lesser amounts in certain foods. When Professor Steenbock found a way of making ordinary foods rich in this important vitamin, the Wisconsin Alumni Research Foundation applied for patent rights on the process, so that its benefits might be made available to the public under properly controlled conditions. Licenses to use the patented process have been granted to some commercial companies. The manufacture of irradiated foods and drugs by these companies is under the supervision of the foundation and Professor Steenbock. The proceeds from the licenses of the patent rights are used for further scientific research at the University of Wisconsin.

TENAYUCA, the Aztec ruin which has already yielded so many interesting objects of a past civilization that it is undoubtedly the most important Aztec site in Mexico, recently gave up three more idols of stone. Two are sitting on their haunches and have their hands on their knees while their heads bear ornate head-dresses. A third idol is just a face broken off a body that has not yet been found. All three represent priests or gods, who may be identified later when their adornments are studied. The style of carving is Aztec. The site of Tenayuca has yielded an enormous quantity of pottery, whole and in fragments, which has been classified and is being studied by Eduardo Noguera, of the Direction of Archeology of the Mexican Ministry of Education. Some stratigraphic explorations have been made to determine the succession of cultures that have existed in that region. Pottery fragments belonging to the Archaic, Toltec and Aztec periods have been found, and objects from the oldest of these periods, the so-called Archaic, have been found to an unusual depth, indicating that Tenayuca has been occupied continuously for very long periods of time. A combined study of the architecture of the pyramid, the story the pottery fragments tell, and the numerous hieroglyphs carved on the pyramid stairway and at other places is now being made by Mexican government archeologists.