SCIENCE NEWS

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RESEARCH ON DISEASE-CARRYING INSECTS

A RESEARCH institution that has for its object the detailed study of all the known insect carriers of disease is a new project in science. A proposal for such a beneficent foundation has been made by Dr. L. O. Howard, chief of the U. S. Bureau of Entomology, in the annual report of the Smithsonian Institution just out.

Not only the insects of bad reputations of long standing, like the anopheles mosquito associated with malaria, but the close relatives of all the disease-bearing species should be studied in a well-equipped service "by competent men untrammeled in their work and assisted to the limit of their necessities in a financial way."

Organic chemistry as an aid to the entomologist in dealing with the insect pest problem was stressed by Dr. Howard in his report. Knowledge of the chemistry of the physiological changes that insects undergo is essential. Study of the chemistry of the plants on which they feed would help to give a clearer understanding of what there is about certain plants that attracts certain insects. Such problems would have a very important bearing economically on many crop pests.

Annihilation of injurious insects by poison gas is another phase of chemistry along the lines of which Dr. Howard believes valuable progress may be made in the future.

"We must look to the chemist," he said, "for the development of the most perfect insecticide, which must be a cheap compound that will at once stimulate plant life and deter or destroy insects."

PINE SEEDS

NORWAY pine seed at $22.50 a pound gives a revenue of from $1,000 to $2,000 a year to the Forest Experiment Station at the University of Minnesota.

The forestry station is fortunate enough to have a large tract of the costly conifers within its boundaries. The high price of the seed is due to the fact that the species bears seed only once in seven years. The seed is the most expensive of any used in reforestation projects.

Although white pine is generally considered the choicest of the pine varieties, its seed is relatively cheap, selling for $2.50 to $3 a pound, less than the cost of the seed of jack pine, which until recently was a scorned variety. Jack pine seed is worth $3.50 to $4 a pound.

Spruce seed is relatively very much smaller than pine seed and it takes many more of them to make a pound. The pine seed is about the size of a morning glory seed, while spruce seeds are hardly larger than those of mustard. White spruce seed is valued at $6 to $8 a pound. Due to the high value of Norway pine seeds, the cones themselves are worth $2 a bushel.

The seeds of conifers have to be extracted from the cones with extreme care. They first are placed in trays and left in a fire-proof drying room in which the temperature is run up to about 140 degrees Fahrenheit. The heat dries the cones and makes their scales curl back. In this condition they are removed to a small centrifugal mill operated by power and are whirled about rapidly, the seeds being shaken out of the cones. After a first run the hoppers are emptied and the seeds first obtained are given the highest grade. Cones are then run through again to obtain seeds that are graded as seconds.

The milling process not only shakes the seeds out of the cones, but also breaks off the natural wings with which all conifer seeds are equipped. This makes them much less bulky and much less likely to be blown away when they are planted. The extracted seeds, after being sacked, are placed in a cooled cabinet, which is lined with metal and wire to prevent the attacks of rodents.

All pine seeds are edible, having a pleasant though somewhat resinous taste. The nut pine of Siberia has a seed half as large as a hickory nut and equally good to the taste. In planting pine seeds in unprotected places there is almost always a heavy loss from the inroads of squirrels, chipmunks, and other small rodents.

MAGNETISM OF THE HYDROGEN ATOM

THE United States is forging ahead in the field of atomic physics where the brilliant theories of the Germans and Scandinavians have long held more or less undisputed sway. Experiments recently completed by Drs. J. B. Taylor and T. E. Phipps in the department of physical chemistry at the University of Illinois have produced results which throw a new angle on the quantum theory advanced by Dr. Neils Bohr, of Copenhagen, Nobel prize winner in physics, and that proposed by Drs. Max Born and W. Heisenberg, of Göttingen.

Exponents of the German school have developed a theory that is based on a non-magnetic atom, but the American scientists have found that the hydrogen atom is magnetic and have made a direct experimental determination of the degree of magnetism it possesses. They found that it was equal within the limits of experimental error, to one Bohr magneton, or unit of magnetic moment based on the Bohr quantum theory.

The atoms of the alkali elements such as sodium and potassium are known to behave as tiny magnets and since hydrogen is the simplest of all the chemical elements, knowledge of the degree of magnetism possessed by its atom is of great importance. All the accepted theories of the continental school account for the spectrum of hydrogen accurately, in consequence of which a test of the nature of the hydrogen atom is of great scientific interest.

EFFECT OF LIGHT WAVE LENGTH ON GROWTH

DIFFERENT colors of light have varying effects on the rate of reproduction in several of the algae and of the

simple forms of life that lie in the biological borderland between plants and animals.

Dr. A. Brooker Klugh, of Queen's University, has found that two one-celled forms of life known as Volvox aureus and Closterium acerosum reproduce most rapidly in red light. Experiments with two other species gave similar results.

Three boxes were constructed, each having the front open and a light-tight door behind. Into each of these boxes a vial containing five of these individuals or colonies was placed. Over the front of the boxes a color filter was fixed in such a way that the colors of the spectrum were divided into three portions, red, blue and green. The filters were so prepared that the light reaching the organisms was of the same intensity in all cases. They were exposed to sunlight for two hours daily, under carefully controlled conditions. Within a short time the Volvox colonies had increased from five to 35 under the red light, all under the green had died, and the blue allowed an increase to 16. Eleven days later there were 56 in the box under red light, and all but three under the blue had died.

Under identical conditions Closterium acerosum gave parallel results. Dr. Klugh points out that, though these experiments give some indications regarding photosynthesis, to take these rates of reproduction as a criterion of the efficiency of light wave-lengths in photosynthetic activity would not be wholly justified, because other factors are involved in the reproduction rate.

DEFECTIVE RESPIRATORY SYSTEMS

THE cautious young woman of the future will insist upon looking up the family history of her prospective husband, not to ascertain whether he can trace his lineage to the *Mayflower*, but to learn whether there is in his family a constitutional tendency to weakness of the respiratory system or other organs.

So eugenists claim, and their position finds support in a study to be published in the forthcoming number of the *Annals of Eugenics*, London, by Dr. Raymond Pearl, of the Institute for Biological Research, Johns Hopkins University.

The subject of the study is a family of thirteen brothers and sisters, all of whom had pneumonia one or more times before reaching the age of 19. Seven of the 13 died of it. One of the survivors has tuberculosis of the lungs and another presents clinical symptoms which make it probable that he also has.

A study of the records of 202 blood relatives of these thirteen children, in five generations, showed that 6.25 per cent. of those examined on the father's side had tuberculosis; while on the mother's side 3.9 per cent. had respiratory trouble in infancy and 3.2 per cent. in childhood.

The evidence carefully collected and tabulated shows in the father's kinship, according to Dr. Pearl, a definite tendency toward constitutional inferiority of the respiratory system which manifested itself chiefly in a tendency to break down from pulmonary tuberculosis in early adult life, and in the mother's kinship a tendency to generally non-fatal respiratory infections, bronchitis and broncho-pneumonia, in infancy and childhood.

The union of these two constitutional traits through the mating of the father and mother produced in these children, according to Dr. Pearl, an extremely low resistance to any sort of respiratory infection.

INTELLIGENCE RATINGS OF HISTORICAL CHARACTERS

GIVING 301 of the geniuses of history an intelligence test is the latest feat of psychologists at Stanford University. The test was given to John Milton, Michelangelo, Napoleon, Samuel Johnson and 297 other famous men and women born between the years 1450 and 1850. Results of the investigations have just been published by Dr. Catharine M. Cox, who was assisted by Dr. Lewis M. Terman, and Lela Gillan and Ruth Livesay.

Historical records showing childhood traits and mental talents of the geniuses were used as a basis for giving out the intelligence ratings. John Stuart Mill, celebrated English philosopher and economist, was awarded the highest rank of all the 301 famous children. His intelligence quotient was placed at 190, which is 90 points higher than average mentality. At six years of age Mill wrote a history of Rome, and at eight he gave Latin lessons and was held responsible for the errors of his pupil.

Three children were given intelligence ratings of 185, Dr. Cox reports. These were Goethe, famous German poet; Grotius, who became a Dutch theologian, and Leibnitz, who won fame as a mathematician. Napoleon and Beethoven got ratings of 135 on their childhood mentality. Byron was given 150. Michelangelo got 145; Lincoln, 125; Mme. de Stael, 155; John Q. Adams, 165; Coleridge, 175; Washington, 125; Raphael, 110.

Dr. Cox explains that there was a tendency for characters whose childhood has been reported more fully by historians to get higher ratings, because full accounts brought out more evidences of precocity. The ratings are in many cases far too low, she says.

The investigation was conducted to shed light on the early mental traits of geniuses. Dr. Cox finds that generally eminent men and women show signs of superior mentality in early childhood.

"We are probably warranted in expecting superior adult achievement wherever in childhood the Intelligence Quotient is above 150," she states. "But we may not be warranted in expecting a world genius even if the 200 IQ is reached."

THE INSCRIPTIONS ON EGYPTIAN TEMPLES

ANCIENT Egyptian buildings along the River Nile are in such condition that the great inscriptions on their walls will be lost forever unless exact reproductions and records are soon made. This fear is expressed by Dr. James H. Breasted, leading Egyptologist and director of the Oriental Institute of the University of Chicago, in a report to the *Journal* of the Archeological Society of Washington, Art and Archeology.

Inscriptions on the walls of the Medinet Habu Temple at Luxor are being recorded by field workers of the institute. The process now used combines in one record three things, Dr. Breasted states: the speed and accuracy of the camera, the skill of the trained and experienced draftsman, and the completeness that is only made possible by the ability of the epigrapher who can read and understand the inscriptions. Making these exact reproductions for scholars to study at leisure in their libraries is a long task. The photographer makes small negatives of the pictures and symbols, section by section. These go through a series of processes of enlargement and tracing to bring out each detail of the ancient signs. At last, the epigrapher takes the final copy that shows the signs as perfectly as the draftsman can make them and goes out to the temple walls to proof read his manuscript from a ladder or scaffold.

To complete and publish the records of this temple will take at least two or three more years, it is estimated.

"It is hoped," Dr. Breasted says, "that this work of 'inscription salvage' may be placed upon a basis sufficiently permanent to permit its continuance to include all the great temples of Egypt, passing from Medinet Habu to the Ramesseum, thence to the Luxor temple, and especially to Karnak, which contains the greatest volume of inscribed records which have survived from the past in a single building. Besides these temple documents there remain furthermore the enormous body of tomb inscriptions and reliefs."

To rescue all these records would probably require the work of an entire generation, if not longer.

ITEMS

THE Pacific Coast cities from Seattle to San Diego expect soon to adopt a clause in their building codes to safeguard the home-builders against white ants, or termites. The clause provides for the insulation of all untreated woodwork from contact with the ground and for the treatment with the proper chemicals of all other timber used in the buildings. Pasadena's complaint that fully fifty per cent. of her business buildings have, in the last year, been seriously damaged by white ants, helped to emphasize the seriousness of the situation. The west coast, in adopting such a clause in its building codes, will be following the lead of New Orleans and of Burlington, Iowa. The city of Honolulu joined the ranks of the pioneers only a few days ago. To demonstrate the absolute insurance against white ants by chemical treatment of wood, the Bureau of Entomology in cooperation with the American Wood Preservers' Association has recently erected a model building in the Panama Canal Zone. It is constructed entirely of wood, not a block of which is untreated. It stands very close to the water where the white ants naturally find plenty of moisture to keep them alive. The foundation timbers were treated with coal tar creosote and the interior woodwork with chemicals such as zinc chloride which does not injure the surface for painting.

MODERN Eskimos of Alaska supply hand-carved bric-a-brac of fossilized ivory, millions of years old, to the tourist trade and novelty shops of the Northwest. Cribbage boards, bracelets, paper-knives and bead necklaces that show the influence of ever-advancing civilization grafted onto the primitive walrus tusk etchings of an older age have just been put on display at the U. S. National Museum. Some of these examples of an old-new handicraft were brought back by Dr. Aleš Hrdlička, anthropologist of the museum, from his recent expedition to Alaska. Another collection has just been presented to the museum by Carl Loman, reputed to be the largest reindeer herder in Alaska, that contains many valuable specimens of the ancient primitive art, as well as beautiful examples of the new. The fossilized walrus ivory used by both the ancient and modern Eskimos acquires through the centuries rich mottlings of gray and deep cream color, deepening in some pieces to an iridescent sheen, comparable in beauty to Chinese carvings of jade and agate.

CHINA, the land of famines, could double her food supply by opening up virgin soil and introducing scientific farming. Packing plants comparable to those of Chicago located somewhere north of Peking are foreseen by Dr. Shih Tsin Tung, economist, who has recently made a report of the resources of his country to the SCIENTIFIC MONTHLY. Some of the world's best ranches exist in regions in China that have received but little development, declares Dr. Shih. The future expansion of the celestial republic will probably not, however, put a large surplus of food on the world market. With the slow reclamation of the huge country from the primitive conditions of the present there will be a gradual rise in the standard of living according to Dr. Shih. Consequently the China of the future will consume her own products and possibly import some. For these imports, Dr. Shih explained, she will pay with the income from natural resources of minerals, coal and water power that are at present comparatively untouched.

AFTER a hiatus of more than half a century, whaling operations are to be resumed on an extensive scale on the southern California coast. A whaling fleet consisting of the factory steamer Lansing, with four killers, has established a base at South Bay, San Clemente island, and has started a hunt for the famous California "grays" the humpback and the sperm, the only species frequenting these waters. The whale oil, fertilizer and chicken feed, the principal products derived from the whale catch, will be disposed of entirely in the California markets.

POLLUTED city water has enabled a typhoid patient to obtain damages from the city of Albany for permanent injury to his health. A $3,000 verdict was awarded on the ground that the city contracts with each citizen to furnish unpolluted water and had failed to warn the people that such pollution existed. Thirteen of the 200 cases that occurred in the same typhoid outbreak filed notice of suit within the required period and may also bring suit. If the decision is upheld by the higher court where the city intends to carry it, the case will establish an important precedent.