BIOLOGY-ANTHROPOLOGY

Living Photocells Used In Carnegie Institution Tests

New Understanding Gained of Plants' Method of Capturing Carbon Dioxide; Studies of Apes and Men

NOT a glass-and-wire photoelectric cell but a genuine living plant cell was used as an "electric eye" in experiments reported to trustees of the Carnegie Institution of Washington, when President John C. Merriam presented his annual report of the research activities of his far-flung scientific staff.

The work was done by Dr. Gordon Marsh, at the Tortugas Laboratory of the Institution, off the southern tip of Florida. The cells used were those of the strange sea plant Valonia. They are giants among cells. In fact, the whole plant is a single enormous cell, ranging from the size of a pea to that of an egg. Most cells of course are exceedingly tiny, invisible except under a strong microscope.

In the experiments, these huge Valonia cells had wires attached to their opposite ends, leading to a delicate current-detecting instrument. The cells, like all living cells, constantly generate very weak electric currents.

Dr. Marsh kept his cells in a light-tight box, and through an opening illuminated them with light from strong electric lamps. He varied the illumination intensity from zero or total darkness to 7,000 foot-candles. The plants responded by producing more current in response to strong light than they did in darkness or weak light.

Dr. Marsh does not consider Valonia a practical substitute for the artificial photoelectric cells now on the market, but regards his experiment as giving a promising lead for further study of the electrical and other properties of living cells.

Capturing Carbon Dioxide

An important step toward the understanding of how green plants capture the waste gas carbon dioxide out of the air and turn it into food is reported by Dr. H. A. Spoehr, director of the Institution's division of plant biology, with headquarters at Stanford University.

The outstanding fact turned up by this research is that while light is needed for the completion of the food-making process, the first step, which is the capture of carbon dioxide from the air and holding it in solution, goes on independently of light. Leaves kept in the dark, and leaves without green pigment, were alike able to absorb and hold considerable quantities of the gas. Stems and roots also absorb some carbon dioxide, though less than leaves do, and flower petals still less.

Of especial apparent significance is the fact that leaves take in considerably more carbon dioxide than can be accounted for on the simple basis of its solubility in water. This means that the leaves carry on some direct and active process, rather than simply passively soaking up the gas. What this process may be remains for further investigation, though Dr. Spoehr and his associates have a few promising-looking leads.

Man Less Evolved Than Apes

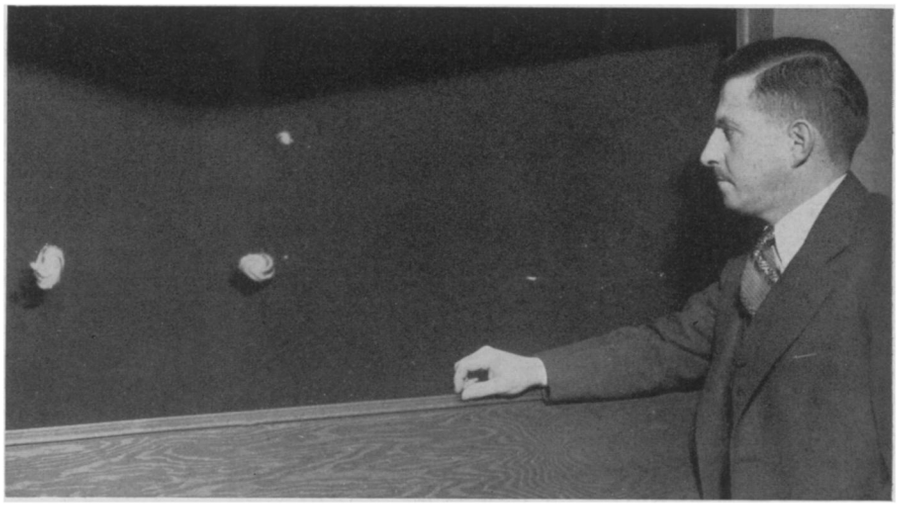
Man is not as highly evolved, in some respects, as several species of the great apes. The newly discovered differences are in the internal organs of the great apes, which have been less studied than their bones and skins because they are more difficult to preserve. The present research was conducted by Dr. W. L. Straus, Jr., at the Institution's laboratory of embryology in Baltimore.

The orang-utan is more highly specialized than man in certain lung structures, and the gibbon is most advanced with respect to the position of the heart and certain of the major blood vessels that rise near it. Man maintains an evolutionary lead so far as certain parts of his digestive tract are concerned, but is more primitive than the gibbon in his heart and the first great arterial branches.

In his study, Dr. Straus finds nothing to indicate that man possesses any peculiarly close affinities with the chimpanzee-gorilla stock as commonly accepted. He finds man just as closely related to the gibbons.

Nose Cartilages

Dr. A. H. Schultz, also of the Institution's department of embryology, has made a special study of the nasal cartilage of the great (*Turn to page* 396)



NEIGHBORS IN SPACE

Dr. Sinclair Smith demonstrating at the annual exhibit of the Carnegie Institution of Washington a model of our own Milky Way and its two neighboring galaxies. The whole Universe is now seen by scientists as a vast space approximately a billion light-years in diameter in which these galaxies are rather uniformly distributed. The galaxies are separated by distances between 10 and 100 times their own diameter, and each contains millions of stars which are themselves separated by large distances.