uniformly appreciated. If one country slackens in gaining new knowledge, the whole world knows it at once. If another country, or even any individual in it, advances the science of some particular field but a trifle, the rest of the world begins at once to use it. Pavloff's experiments in Leningrad on salivating dogs are quickly coordinated with psychological researches in America, and these in turn with brain mechanics, and then operators in highly mechanized manufacturing plants are experimentally chosen, graded or discharged according to reflexes and psychological reactions.

Those who are interested in technical progress look at it as continuous, but do not necessarily overrate its importance. There must be a parallel advance for the higher values in man. Perhaps the best way to look at our materialism is just as we now look at its earliest examples, for we are but a very short way from what may be called our real beginning as thinkers.

All the early discoveries which first insured bare preservation through continued effort were augmented by technical discoveries like tool making, food growing, fire building and animal control. These in turn were followed by time-saving and time-integrating developments like writing and printing. Our present accessories in electricity, mechanics and electronics, important because of proximity, are only the latest added steps, not the last. They lead to new kinds of people with new kinds of minds. This is what man at every previous stage has devoutly sought for, earnestly fought for and generally acquired.

There are errors in scientific conclusions now, just as there have been in the past. Hardly a single scientific fact of one century remains adequate for the next. First the world is flat and the sun rises; then the world is round and the world goes around the sun. Then the whole system moves through infinite space towards Alpha Centauri, and then the space loses its infinite quality and adds a curvature. I don't expect to see the end of changes, nor will any one else, because the last man will insist on making them while he improves. Our conceptions, discoveries and uses of an unfathomable universe are certainly always flexible and subject to improvement.

I think the world is more anxious to go right than ever. It is more eager to develop intelligently and not stop at some temporarily agreeable state. It is learning that any conceivable fixed state is not worth while so long as we still possess the power to advance.

It is futile to expect a world which is already enlightened to the advantages of material knowledge, mechanical substitutes for physical labor, and the promise of freedom for better growth in the future, to reduce its efforts or change its direction.

Man *is* essentially spiritual, but his tokens of values, his media of exchange, the flowers of goodwill to others, call for material (even mechanical) devices. The Greek slave, the Egyptian fellah and the man-with-the-hoe developed into the modern, less-enslaved philosopher who sees that man is essentially spiritual. If there is one thing modern mechanical civilization can do, it is to free people from slavery and strew spiritual opportunity along their path.

OBITUARY

EARL DOUGLASS

MY good friend and coworker in paleontology, Mr. Earl Douglass, died Tuesday, January 13, 1931, in a hospital at Salt Lake City, Utah, following an operation due to an attack of influenza, and other complications. Mr. Douglass had not been in good health for a number of months, in fact he was not in robust health last October when I last saw him at his home in Salt Lake City. However, the sudden and critical turn to his illness came as a distinct shock to his family, his many friends and colleagues.

Mr. Douglass was born in Medford, Minnesota, October 28, 1862, the son of Fernando and Abigail Louisa Douglass. He studied in the University of South Dakota, in 1888, and later took his Bachelor of Science degree at the Iowa State College, Ames. He studied in the Agricultural College and Missouri Botanical Gardens, St. Louis, and attended the University of Montana, where he took his master's degree. From 1899 to 1900 he taught geology, physical geography and physics at the University of Montana. From 1900 to 1902 he had a fellowship at Princeton University under Professor W. B. Scott.

In 1902 Mr. Douglass joined the staff of the paleontological section of the Carnegie Museum. At this time began my acquaintance and pleasant association with him, which continued uninterruptedly for nearly thirty years. His life was exemplified by conscientious and diligent work in all his undertakings, which was but slightly rewarded.

Mr. Douglass married in October, 1905, Pearl C. Goetschius, of Alder, Montana. One son, Gavin Earl Douglass, was born of this union.

Mr. Douglass's most famous field work was in connection with the Carnegie Museum when he discovered in 1909, and continued work for twelve or thirteen years in, the Jensen Fossil Dinosaur Quarry on Green River, northeast Utah. This quarry was finally taken over by the United States Government and set aside as a national monument. After this the quarry was

called the National Dinosaur Monument Quarry, without question the most famous dinosaur quarry in the world.

In 1924 Mr. Douglass joined the University of Utah and assisted in preparing dinosaur material, which he obtained from the famous Jensen quarry after leaving the Carnegie Museum in 1924.

Among the activities by Mr. Douglass the last year or two of his life may be mentioned his preparation of an exhaustive geological survey of the Barbour Asphaltum Company holdings of the hydrocarbon deposits in the Uinta Basin, Utah.

Mr. Douglass's activity in research was quite extensive. Besides many publications on economic geology and other subjects in various periodicals not easily accessible or even listed, there are some twenty-four titles recorded in the catalogue of the fossil vertebrates of North America by Dr. Oliver P. Hay.

O. A. PETERSON

CARNEGIE MUSEUM,
PITTSBURGH, PENNSYLVANIA

ERIK EKMAN—AN APPRECIATION

THE work of Erik Ekman as a botanist has been most competently recorded by a fellow botanist in a recent number of SCIENCE, and to that account I have nothing to add. It is rather to emphasize his unique character as a man and as an individual that a mere entomologist can hope to speak. A trained writer, such as Seabrook in his "The Magic Island," can give a not inaccurate account of how Ekman appeared to ordinary persons; yet without some knowledge of the fundamental impulses actuating his conduct and his outwardly unkempt mode of living, a true appreciation of his character is lacking.

In considering the historic figures who, in pursuit of a great purpose, have given up all thought of family and friends, wealth and position, worldly honors and distinctions, one should not forget the conflict in interests before the decision was made to forsake them all. Yet so far as one could judge of Ekman, there was no conflict, and never had been. He lived wholly and absolutely for botany, without thought of other considerations. When he importuned transportation to go on an extended field trip, there was nothing personal about his request. The mode of transportation and physical discomfort meant nothing, if only one would stop and let him observe and collect long enough at the desired localities. A fellow botanist, H. D. Barker, one of whose ambitions had long been to own and drive a Cadillac, took the two of us on a long trip across the border into the Dominican Republic, my own humble function being to hold tight and read the speedometer when Barker was fully occupied in getting 65, 70 and 72 miles an hour out of the venerable bus. At one point Ekman decided that a certain cactus might be sub-specifically different from that growing elsewhere in Hispaniola, and, to determine the point, he collected an abundance of material, which for safe-keeping was placed loosely in the back of the car, under his knees. For ordinary travel this was well enough, but when Barker really began to push the car over rough roads, Ekman yelled that the cacti were pricking him. No wonder, yet it never occurred to him to throw them out until two or three days later, when they could be compared with other material and the point at issue regarding their difference or identity definitely settled.

Travel by private automobile, however, was really exceptional for Ekman. He usually walked. Unhesitatingly, he often started out afoot on trips that would last for weeks, especially to the more inaccessible parts of the island. At times he was nearly barefoot because he had worn out the soles of his shoes. Never did he complain at what food and shelter for the night the humblest and poorest Haitian peasant could furnish.

But little as physical discomfort meant to him, even less did the opinions of others affect the mental atmosphere in which he dwelt. The thick-skinned pertinacity of a "go-getter" salesman was as nothing compared with the indifference of Ekman to what those who were helping him collect might think of him personally, or of his activities. Of course he might have smoothed his way of being less direct and outspoken in his statements of fact or opinion, but even such slight deviations from his singleness of purpose were not considered. Systematic botany was a wholly sufficient end, which must excuse any breach of ordinary etiquette by its devotees. My own requests for identification of the host plants eaten or infested by insects were always treated as only parasitic, and entirely accidental, by-products of a science complete in itself, while more obviously practical applications of his knowledge were hardly worthy of discussion.

No account of Ekman in Haiti is complete without mention of the sympathetic aid given by the kindly, white-haired German pharmacist, Buch, who took Ekman into his own household, cut a previously unnecessary window in a partition of an upper floor of his store, and fitted up a room where Ekman could work undisturbed and keep his material. At times when Ekman tended to devote too much time to field work, Mr. Buch insisted that he keep his herbarium in shape and continue to forward his material to Germany for more intensive study, comparison and description. Without some such quiet, self-effacing, appreciative person to organize Ekman's exceptional abilities, a large part of the tangible results accruing from his enthusiasms in toiling with heavy herbarium presses in the baking heat of Haitian deserts or in