Anniversaries of Science

September 9, 1892—A small inner satellite of Jupiter was discovered by Professor E. E. Barnard at Lick Observatory. This was the first satellite discovered since Galileo saw four in 1610.

Nothing of special importance was encountered until the night of September 9, when, in carefully examining the immediate region of the planet Jupiter, I detected an exceedingly small star close to the planet and near the third satellite. I at once measured the distance and position angle with reference to satellite III. I then tried to get measures referred to Jupiter, but found that one of the wires had got broken, and the other loosened. Before anything further could be done the object disappeared in the glare about Jupiter. Though I was positive the object was a new satellite, I had only the one set of measures, which was hardly proof enough for announcement.

I replaced the wires the next morning. The next night with the great telescope, being Prof. Schaeberle's, he very kindly gave the instrument up to me, and I had the pleasure of verifying the discovery, and secured a good set of measures at elongation.

Just what the magnitude of the satellite is it is at present quite impossible to tell. Taking into consideration its position, however, in the glare of Jupiter, it would perhaps not be fainter than the thirteenth magnitude.

—Bernard: in the *Astronomical Journal*, 1892.

Science News-Letter, September 3, 1927

GEOLOGY

School on Wheels

Blazing a new trail of geological instruction and research, the Princeton Universty Summer School of Geology and Natural Resources has just completed a 10,000-mile train tour across Canada, during which a vast variety of geological phenomena were studied.

Through the use of a special Pullman car, combining the features of classroom, dormitory, dining hall and recreation center, the Princeton geology class was able to go from one side of the North American continent to the other, stopping where the rocks themselves could teach the best lessons. During the day an interesting locality is visited, just before dinnertime the class returns to its traveling home. Dinner is served, a lecture held and a night's rest obtained while the party is en route to another locality, hundreds of miles away.

Rocks telling their own stories, embedded fossils revealing the life of past ages, contorted strata telling of ancient cataclysms, minerals that to the unpracticed eye disguise precious metals, mines and mills in which metal is being obtained from ore—these field exhibits are more effective than the most adequate lectures and classroom illustrations.

The tour was organized and directed by Prof. Richard M. Field, of Princeton. In addition to the undergraduate institution of geological train-tour, there was opportunity for brief intensive research. This year the Princeton party had as its foreign guests Dr. E. B. Bailey, director of the Scottish Geological Survey, and Dr. Leon W. Collet, dean of the school of science and head of the department of geology at the University of Geneva. These two eminent geologists were eager to see how the American Rockies and other geological features of the North American continent compared with the geology of their native lands. With Prof. Homer P. Little, of Clark Universty; Prof. W. L. Porter, of Davidson College; Dr. Elwyn L. Perry, of Princeton, and Dr. Field, these two European geologists furnished constructive discussion and study of the many formations and mineral occurrences visited.

During its tour the party visited the Ordovician section at Bellefonte, Pa.; Niagara Falls, the interglacial beds at Toronto, the Sudbury nickel district, the Port Arthur district, the pre-Cambrian area at Mine Centre, coal at Brule, the splendid examples of structural geology at Jasper Park, Victoria, Vancouver, Copper Creek, Albert Canyon, Lake Louise, Banff, Calgary and the Turner Oil Fields, Winnipeg; the Porcupine gold area, the paper mill at Iroquois Falls, the Cobalt silver area, Ordovician sections at Ottawa, asbestos mines and mills at Black Lake and Thetford, and the formations at Quebec.

The students who made the trip included R. M. Fuller, Princeton, '26; L. Whitcomb, Brown, '02; N. W. Jeffers, Princeton, '26; D. C. Champlin, Princeton, '27; W. M. Angle, Princeton, '28; L. Corning, Jr., Princeton, '28; W. A. Humphreys, Jr., Princeton, '28; F. S. Allen, Princeton, '29; C. S. Bromley, Jr., Princeton, '29; E. F. Durand, Princeton, '29; R. F. Schermerhorn, Princeton, '29; J. M. Snowden, Princeton, '29; R. F. Norris, Princeton, '29; C. Breuer, Princeton, '29; J. A. R. Balley, Princeton, '29; P. J. O'Neil, Princeton, '29; H. H. Hess, Yale, '27; E. W. Hard, Cornell, '28.

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SOCIOLOGY

All Populations Grow Alike

Peoples rise, flourish a while in their prime, then dwindle away until no increase in their population growth is perceptible at all, all in accordance with a universal law. Such is the gist of the address made recently by Dr. Raymond Pearl, director of the Institute for Biological Research at the Johns Hopkins University, before delegates to the World Population Conference meeting at Geneva.

This characteristic manner of growth which he maintains holds good not only for human populations but for living organisms of all sorts Dr. Pearl described as follows:

"The population at first grows slowly, but gains impetus as it grows, passing gradually into a stage of rapid growth, which finally reaches a maximum of rapidity. After this stage of most rapid growth the population increases ever more and more slowly, until finally there is no more perceptible growth at all, in short, the populations of various forms of life first wax in their speed of growing and then wane."

"Furthermore," he declared, "it has been demonstrated statistically that populations of human beings have grown according to the same type of curve, so far as may be judged from the available records, in at least the following countries: Sweden, United States of America, France, Austria, Belgium, Denmark, England and Wales, Hungary, Italy, Norway, Scotland, Servia, Japan, Java, Philippine Islands, Baltimore City, New York City, and the world as a whole. In the case of the countries named the census records do not extend over a sufficiently long time to make the case conclusive that population growth, if undisturbed, would follow in human groups the complete course exhibited by the yeast population just discussed. The available data only make such a conclusion probable. And one cannot conduct experiments with human beings on this point, as can be done with lower organisms. But fortunately it has been possible to find one group of human beings, the indigenous native population of Algeria, in which a cycle of population growth has been practically completed during the period for which census records are available, these having been carefully made by the French. In this case the human population followed in its whole cycle of growth a curve of the same characteristic form that has been discussed for the yeast."

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