greater than the value of the ablest banker or railroad president. Wealth depends on industrial method; industrial method depends on invention; invention depends on pure science. Now, there is no need of making our Pasteurs or Faradays millionaires; they will do their work without any such reward. But it would be only a meet recognition to pay the outstanding men of science at least as much as a first-class "realtor" or the business manager of a sizable corporation. If each great university should create, say, ten university professorships paying each $20,000 a year, it is unlikely that science would lose many of its ablest men to less important occupations.

It goes without saying that such salaries should be paid only to men of outstanding originality and achievement. Better have the ten university professorships stand vacant for a decade than have their quality lowered, for half their value would depend upon the signal distinction which they would confer. Ordinarily they should go to men in the natural sciences, where research is of the highest importance to human welfare. But one or two might well be awarded to an Emerson or William James in philosophy, or a Lowell or Hawthorne in literature. The mere "scholar" should be well content with an ordinary professorship at $10,000, the highest reward that could reasonably be demanded for efficient industry without imagination.

PRESTON SLOSSON

UNIVERSITY OF MICHIGAN

THE TEMPERATURE OF MINES

I HAVE been recently getting together some figures of the deep temperatures in the mines of the copper country of Michigan and find that apparently a wave of heat, starting some ten thousand years ago, has not reached the bottom of the deeper mines, so that if one takes the temperature at the bottom of the mine and considers how much it drops every hundred feet towards the surface and continues at the same rate to the surface it would imply a surface temperature of not far from freezing. That is to say, the temperatures at the bottom of the mines are adjusted to surface temperature nearly freezing which we may imagine existed under the ice sheet and the rise in temperature since has not worked that far.

Now in the last *Mining & Metallurgical Journal* there appeared an article on the deepest mine in the world, St. Juan Del Rey in Brazil, and there again we find that the temperature at the bottom as compared with that say 5,800 feet down would indicate a much lower surface temperature than really is the case.

Can any one tell me, and here I appeal to those of your readers who are up in other branches of science, whether there are indications in Brazil of a much cooler temperature only a few thousand years ago?

ALFRED C. LANE

TUFTS COLLEGE, MASS.

JUNE 15, 1923

"A HUNDRED POUNDS"

IN SCIENCE of July 27, 1923, Mr. Samuel Russell, referring to my letter of February 23, explains at some length that a hundred weight is not the weight of a hundred pounds but "consists of 112 standard pounds of 7,000 grains, and is divided into 8 stone of 14 standard pounds."

Clearly this solves the problem: "When does a hundred pounds not weigh a hundred pounds?"

I fear Mr. Russell took my letter more seriously than was intended; regarding it as an unprovoked and wanton assault upon the integrity of the defenceless but upright pound. I meant only to call attention to the irrationality of our present legalized weights. For example: 7,000 grains make a pound, a certain kind of a pound; 5,760 make another kind of a pound; 16 ounces make a pound of a certain kind; and we can all say off-hand how many grains there are in such an ounce! (437.5?). But the worst is yet to come. 8,750 grains, which is one eighth of 70,000 grains, make a stone; and 8 stones (a stone being 14 pounds as we all recall) make a hundred weight, which is not as one might suppose 100 pounds, but 112 pounds.

Hence, 2,240 pounds, or 160 stones, make 20 hundred weights or a ton of a certain kind, equal to 20 times a hundred pounds. The coal dealer buys by the hundred weight or 2,400 pounds and sells by the hundred pounds, gaining just 12 per cent. on each weighing. Or we may say that the consumer loses just that much on each weighing. Is not the former an *appreciation* and the latter a *depreciation* of the pound?

ALEXANDER MCADIE

QUOTATIONS

A GREAT BIOLOGICAL LABORATORY

IT is the humble, often little-known toil of an army of investigators that gives to scientific research so great a collective value to humanity. The celebration this week of the fiftieth anniversary of the Biological Institute, now known as the Marine Biological Laboratory, at Woods Hole, draws our attention to the valuable work which scientists have been doing in this institution for many years. When it was founded half a century ago at Penikese Island, the sea was a thing of wonder and mystery. Scientific men knew comparatively little of biological life in the ocean and what was known aroused a desire among them to learn more about the forms of life that existed in the sea.

The establishment of the biological institute marked a revolution in the teaching of biology, and in biological research. The institution was situated on the very edge of the sea, and the students had an opportunity to study the sea, and the creatures in it, as nature, and not some text-book writer, has made them.

Louis Agassiz, the famous Swiss naturalist and zoologist, who made Cambridge his home during the later years of his life, was the guiding star of the institution in the early years of its development. Himself one of the greatest scientists of modern times, with investigations in many branches of science to his credit, Professor Agassiz had long desired to establish a practical school of natural science, to be devoted especially to the study of marine zoology. Through the generosity of Mr. John Anderson, who gave to him the island of Penikese in Buzzard's Bay, together with an endowment of $50,000, his ambition was realized. Professor Agassiz immediately set to work, opened the school, and began his studies in marine zoology. His program at the time seemed a revolutionary one. The students were told to discard the abstract text-books, and substitute for them a first-hand contact with the living forms of the sea. The institution, first known as the Anderson School of Natural History, later became the Marine Biological Institute.

Now the school has won a national and an international reputation. It has added a great deal to our store of knowledge; it has made us better acquainted with the life in the vast ocean depths. This year the institute has 146 students, 168 investigators and 25 instructors, drawn from universities and colleges all over the land, and all inspired with a common desire to add their contribution to human knowledge, no matter how small the individual contribution may be. That is the spirit which wins results in modern science.—The Boston *Transcript*.

SCIENTIFIC BOOKS

Eugenics, Genetics and the Family, being volume one of the Scientific Papers of the Second International Congress of Eugenics. Baltimore, Williams and Wilkins Company, 1923.

EUGENICS has diverse associations, and one of the most intimate of these is clearly with genetics and with that study which is being developed in Germany under the title of "Familienanthropologie." The Second International Congress of Eugenics was very fortunate in securing the cordial cooperation of many of the leading geneticists and students of human heredity, as well as anthropologists engaged in the study of family and social groups. Their papers are contained in the first volume of the Proceedings of the Congress. This volume also contains the five general addresses given by Henry Fairfield Osborn, Leonard Darwin, C. B. Davenport, Lucien Ceunot and Lucien March.

As stated, the geneticists are well represented. Professor Jennings gives a paper in his usual clear style on the results of his studies of inheritance in unicellular organisms and Professor McClung on the evolution of the chromosome complex. Bridges and Muller, of the famous Drosophila group of Columbia, write on aberrations in chromosomes and mutation, respectively. Drs. Blakeslee and Belling tell about mutations in the number of chromosomes and its consequences. Professors G. H. Shull and R. R. Gates bring important data from the plant side, and Professors Whiting and Zeleny tell of their work on parthenogenesis and racial mutations, respectively. Mr. R. A. Fisher, of the Rothamsted Experiment Station in England, who is in the first rank of statistical analysts, treats statistically of the consequences of mutation for evolution. Heredity is treated generally by an Algerian zoologist, Legrand, and sex determination by Messrs. A. F. Shull, A. M. Banta and L. A. Brown. Then comes a series of papers relating especially to the genetics of mammals and man. These are introduced by a general statistical paper on mutation in man by Danforth; some papers on the influence of radium and alcohol on mammals by Bagg and MacDowell. Especial studies are given on the inheritance of particular traits, such as mental disorders by Drs. H. A. Cotton, Meyerson and Rosanoff; on tuberculosis by Dr. P. A. Lewis, on cancer by Loeb and Little, on eye defects by Dr. Lucien Howe, on twinning by R. A. Fisher, on finger prints by Professor Kristine Bonnevie (the only woman professor in Norway), on fecundity (in the hen) by C. C. Hurst, on musical traits by Seashore and Miss Stanton. This collection of papers by leading geneticists makes the volume indispensable for the student of genetics in general and human genetics in particular.

In the second part the general paper by Monsieur March on the consequences of war on the birth rate in France will be of great interest at the present time. Inbreeding is treated by Drs. Sewall Wright and Helen D. King from the experimental standpoint, and by Mrs. Ruth Moxcey Martin, Dr. Spinden and Professor W. A. Anderson from the observational standpoint. M. Etienne Rabaud compares the weight of the successive offspring of the same parents. Dr. Banker gives directions for an ideal family history. Dr. F. A. Woods discusses the conification of social groups and Miss Sarah L. Kimball tells of the Mayflower Pilgrims and their descendants. Senor J. J. Izquierdo gives an account of the genealogical history of the Izquierdo family, and Dr. Banker that of the Elihu Burritt group. Two of the descendants of John Humphrey Noyes tell of the Oneida Community experiment. Messrs. A. W. Butler, E. W. Ledbetter, A. H. Estabrook and Mrs. Wilhelmine E. Key de-