from assistant in botany to instructor in botany.

MR. E. N. ZERN, professor of coal mining at the University of Pittsburgh, has been recently appointed professor of mining engineering at the West Virginia University. Mr. George Grow has also been made assistant in the College of Engineering at the same institution.

HENRY LEIGHTON, formerly instructor in the school of mines, University of Pittsburgh, has been advanced to be assistant professor of economic geology, in charge of the departments of economic geology and ceramics.

MR. J. W. COBB, B.Sc., has been appointed to succeed Dr. Bone, F.R.S., as Livesey professor of coal gas and fuel industries at Leeds University.

DISCUSSION AND CORRESPONDENCE

THE OCCURRENCE OF STIBNITE AT STEAMBOAT SPRINGS, NEVADA

STEAMBOAT SPRINGS, Nevada, has been often cited as an example of a metalliferous deposit in the process of formation. Becker[1] demonstrated the presence of metallic sulphides in the waters flowing from the springs and described their occurrence in an amorphous condition in the spring deposits. He was unable, however, to find any of the sulphide minerals crystallized. Some years later Lindgren[2] announced the discovery of minute crystals of pyrite and stibnite in sand and gravel that had been brought up from the bottom of a prospect shaft penetrating the sinter. It was evident from the mode of crystallization of these minerals that they had been deposited from the heated waters of the springs.

During a recent visit to the springs a grayish mud was noted in the bottom of several pools at the northern end of the sinter terrace, about a half mile from the station. On examination under a microscope it was seen that minute acicular crystals of stibnite made up a large proportion of the mud. These were usually very thin and, when perfect, shaped like the blade of a Roman sword with parallel edges and blunt point. The crystals were too minute for accurate measurement, but the forms observed were probably the brachy- and macro-pinacoids and a macrodome. The larger crystals were frequently split towards one end into a narrow fan of finer blades and many individual crystals were bent and curved. Usually the stibnite was segregated in felted balls and occasionally completely surrounded microscopic grains of sand, which had served as nuclei for the forming crystals.

The remainder of the mud was made up of diatom skeletons, fragments of chalcedonic quartz, kaolinized feldspar, and occasional flakes of mica and hornblende.

The water in the pools is very clear and limpid, with the exception of one unusually active spring where the suspended sediment is sufficient to make the water turbid. The temperature of the water in the pools in which stibnite was found ranged from 86° C. to 93° C., and averaged somewhat higher than that of the pools at the southern end of the terrace where the antimony sulphide is deposited as an amorphous precipitate.

Clark[3] cites the experiments of Doelter showing that stibnite is soluble in water heated to 80° C., especially in the presence of sodium sulphide. Melville's[4] analyses of the water of Steamboat Springs show sodium sulphide to be present. As the temperature of the springs in which stibnite was found is above that in Doelter's experiments, it is probable that the crystallization of the stibnite takes place as the heated waters approach the surface.

The complete envelopment of sand grains by the stibnite crystals presupposes free suspension in the water during the period of crystallization. The rounded form of the balls of felted crystals suggests that they formed under similar conditions. It is not unlikely that the stibnite crystallizes in the

[1] Mon. U. S. Geol. Survey, Vol. 13, 1888, pp. 342–344.

[2] *Trans. A. I. M. E.*, Vol. 36, 1906, pp. 27–31.

[3] "Data of Geochemistry," U. S. G. S. Bull. 491, 1911, p. 603.

[4] Mon. U. S. Geol. Survey, Vol. 13, 1888, pp. 347, 349.

pool and is kept in suspension by the constant agitation of the rising water.

The formation of one of the minerals associated with ore deposits under conditions that may be observed is of more than passing interest and a closer study is in progress.

J Claude Jones
Mackay School of Mines,
Reno, Nevada

CERIUM

If any mineral collection contains specimens of cerium ochre or yttrocerite from Bolton or any other Massachusetts locality, I should be obliged to the curator of such collection if he would inform me of the fact and give me briefly the history and description of the specimen.

B. K. Emerson
Amherst, Mass.

POPULARIZING SCIENCES

Thirty years ago the incorporated city of San Diego, California, possessed a population of perhaps two thousand. Clergymen, lawyers, teachers, business men, working men, were alike members of the Society of Natural History, and its president, a physician, kept up the interest in the monthly meetings. Everybody came, bringing a rock or a shell or a bird or some object curious or rare, contributing to the little museum, and arousing discussion.

To-day a six-story concrete building is being erected on a lot given to the society for a home, one floor to be used for its museum and library, the other floors forming part of a hotel. With a present population of near 50,000, annual meetings are held by the society, which are generally attended by barely enough members for the election of officers. The library and museum are at a standstill. The meteorological records, begun by the society's president, are continued by a fully equipped station of the weather bureau of the U. S. Department of Agriculture—of which we sometimes hear boastful but seldom instructive remarks.

A marine biological station has been established, under control of the state university, and given $50,000 for a building—but the public rarely hears of any results, except of the occasional visit of some noted scientist, as heralded in the dailies.

A floral society now exists, and a botanical garden is proposed, to which nurserymen will sometime be invited to contribute from their commercial stock, but no strictly botanical work is in progress in the community, and the only attempt in fifteen years met with failure for lack of appreciation.

The city contains three private collections of shells, one of insects, one of birds, one or two of minerals, two botanists without herbaria, one meteorologist (in government employ), and a few others interested inactively in some phase of science, or about one naturalist to each five thousand people, which I have seen stated to be about the average number in the United States.

I recently visited one of the nearby grand ocean beaches, where the sea still breaks in spray over the rocks, as it did thirty years ago—but the pools that formerly concealed a wealth of beautiful wonders in animal and plant life have been scraped clean of their former treasures. Now and then a crab scuttles to safety. A hook and line sometimes brings one of the finny tribe from the deep—but boys and girls can hunt in vain for the many nature treasures that formerly lined the shores of ocean and nearby bay.

Children may still reap a treasure in wild flowers in springtime—by taking generous car rides and then walking—but they will look in vain in our paved streets for the trap-door spider's nest that I formerly watched, or for the miniature plants like the lichens that formerly freely decorated barren spots of earth.

With the increased cost of living, with leaps and bounds in the growth of our commercial life, with a corner lot that cost $5,000 ten years ago now yielding an annual rental of $6,000 to its purchaser, can you expect to find nature study gaining ground!

Science as a study is becoming too complicated for a layman to take part in the active