OUTLOOK FOR YOUNG MEN IN GEOLOGY

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Probably our academy can do no one thing more useful than to encourage the young men and women of talent who are looking forward to a career in science. By this is not meant a deliberate effort to divert men and women from other work to ours, but rather the holding out of a helping hand to those whose inclinations are toward a scientific career, but who hesitate for fear that there is either no work or no place for them.

It is well known that men of science receive relatively poor financial returns for their work. Capable and industrious workers make a good living, but rarely are able to accumulate wealth. This is true of geologists as of others, and I for one am by no means sure that a change in this regard would bring to our profession any larger number of men of the highest talent and devotion. Be that as it may, the best which can be now offered to the hesitating young man is a good living while he does his work. The opportunities for making his way are found in three lines of activity: (*a*) teaching, (*b*) survey work and (*c*) industrial positions.

Geology is seldom taught in high schools and secondary schools, though there is a strong and increasing demand for teachers in physiography. This affords an excellent opening for beginners. In the colleges, universities and mining schools, geology is taught as frequently as the other sciences, and there are, accordingly, as many positions open.

The largest number of professional geologists in this country are connected for a whole or a part of their time with official surveys or bureaus. The greatest of these is the U. S. Geological Survey, which in the season just closed maintained ninety-three geological field parties. These each included from one to three geologists or aids. In addition many of the topographic and other field parties were engaged upon work so closely related to geology as to afford suitable opportunity for service on the part of beginners at least. In the forest service and in other branches of government work still other men are employed. Thirty-one of the states now have state geologists or equivalent officers, and sustain more or less geological work. This work varies greatly in character from refined paleontologic investigations to the registering of mining prospectuses and bureau-of-information work. In some cases only a few hundred dollars are appropriated for the summer field-work, perhaps, of the professor of geology at the university, and in others several thousand dollars are given annually and ten or a dozen field parties maintained. State survey work, where available, offers peculiar advantages to the beginner, since on account of the small force there is less specialization.

In mining and industrial work geologists are finding an increasing number of opportunities. Many railways, mining companies, development companies, etc., now employ one or more geologists. This indicates a welcome change of attitude in the public recognition of our work, but for the time being it cripples survey work by drawing away many of the best men. These positions are eagerly sought and pay relatively well, but usually offer only restricted opportunities for research work and often prohibitive conditions as regards publication. It is to be hoped that in time these restrictions will largely disappear.

Granted, then, that properly equipped and willing workers may

rest assured of positions being open to them, the vital question remains as to the work to be done. To some extent, in geology, pioneer conditions have passed. In our portion of the world geologic mapping on some scale has very generally been done. In much of Canada, in Alaska, in parts of Mexico and in most of South America pioneer conditions, as regards geology, still prevail. Very little of either Africa or Asia has been carefully studied so that as regards systematic work alone the bulk of our task is still before us. If also we measure the work from the point of view of development of ideas, the task is even more attractive. Geology has heretofore been mainly in the qualitative state. Its workers have been busy developing the processes involved and have had only the crudest means of elimination when it was necessary to test one hypothesis against another. As Van Hise has pointed out, we have now at least entered into the quantitative stage, and this means nothing less than the reduction to an orderly basis of the accumulated observations of all the years past. As we accomplish this we shall change our science from an inexact one of hypothesis to an exact one of law; and we shall then stand on an equal basis as regards certainty with our associates of the physical and mathematical sciences. This is certainly a field large enough and important enough to attract the best energies of any man or woman. If our academy shall help to put the right man in touch with his problem and the means of solving it, we shall quickly justify its existence.