

bindin onward accommodation is at present only to be found in the thanas, or small forts, except at Merui and Robat, where bungalows are already built. From Robat to the Kuh-i-malik Siah, the point of junction of Baluchistan, Afghanistan and Persia, is only half a march. From Robat it is five marches to Pushtee Das, and from thence extends a difficult journey to Nasirabad, where a British Consulate was first established in January, 1899. From Nasirabad the route is to Birjand, thence to Meshed. On this latter section the country is most fertile, villages full of orchards, rich with fruit, being passed on the way. The bazaar at Meshed is at present full of Russian goods—a fact due to the short distance separating Meshed from Askabad, from which place there is direct communication with Europe. In addition to this advantage, Russia gives large bounties to her subjects in Persia, which not only cover the cost of freight, but leave a little profit for the merchant besides. The only British business interests are at present represented by a branch of the Imperial Bank of Persia, a wool buyer for a large firm. English goods, however, are rapidly gaining influence in the town. With the institution of this route, a channel is opened through which English goods can pass with ease into Eastern Persia.

THE ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA.

BY EDMUND O. HOVEY.

The Geological Society of America held its fourteenth annual meeting at Rochester, N. Y., from December 31, 1901, to January 2, 1902, as the guest of the University of Rochester. The convention was well attended, considering the distance of the place of meeting from the large centers of geologic work, and attendance on the programme, consisting of thirty-six papers, twenty-six of which were read in full, was well sustained to the end. Aside from the address of the retiring president, Dr. Charles D. Walcott, director of the U. S. Geological Survey, the most popular interest centered in the papers dealing with physiographic geology and illustrated by means of stereopticon views. Several papers on economic geology were on the programme, but most of them were read only by title. The chief interest of such a convention naturally centers about the address of the president. This was delivered on the evening of the first day of the session and Dr. Walcott took for his subject, "The Outlook of the Geologist in America," and discussed at length the work now being done by national and State geologic surveys, universities, colleges, museums and individuals.

In a few instances funds are contributed to defray research expenses in field and laboratory. In some cases the means of publication are provided. In all cases the teachers of geology are permitted or expected to devote a portion of their time to scientific investigations. In a number of instances State surveys are by legal enactment associated with State universities and the geologic survey of Maryland is conducted under the auspices of a university privately endowed.

Then Dr. Walcott took up in detail and described the work being done by all the various institutions and organizations enumerated by classes and then outlined the problems awaiting solution in each of the great subdivisions of the science, laying special stress, however, upon those confronting the student of pre-Cambrian rocks and the worker along the line of economic geology.

The working out of the larger problems of stratigraphy, correlation, oscillations between land and sea, the migrations of faunas, lines of descent, parallel development, etc., are all awaiting the student. The extent of land areas and the vibrations in character, thickness and distribution of the marginal and deep-sea deposits are imperfectly known. Structural and dynamic problems of the most far-reaching importance are awaiting solution. If the principle be accepted that the classification and delimitation of the greater divisions of the Paleozoic, Mesozoic and Cenozoic eras must rest on the broad biological characters of their included faunas and floras and not on local breaks or differences of sedimentation, important problems remain as to where these lines of demarkation shall be drawn in most geologic provinces. As a result of more detailed studies it is often necessary to revise former methods of classifying and defining sedimentary rocks and igneous masses. The scheme of classification and nomenclature which now expresses the conclusions of our science is not satisfactory.

As an indication of the great activity of the present generation of geologists the speaker cited the fact that in 1899 there were printed 21,600 pages on American geology. Of this vast amount, 12,000 pages were published by State and national surveys, 1,700 pages by geologic journals, 2,000 pages by other journals, 500 pages by the Geological Society of America and 5,400 pages by other associations and institutions.

In closing, Dr. Walcott said that he wished to say a word about the training of the men who will prob-

ably reap the largest results from the great opportunities in geology that will be offered during the century. The practical economic geologist will undoubtedly receive the largest financial returns, but in this field, the well-balanced man with the broadest, most thorough training will win out as competition becomes more and more keen. In the more purely scientific lines, a broad, general culture should be the ground-work for special geologic training.

A few months' business training will be almost invaluable to any student who aspires to be more than a directed assistant throughout his career. Business method and habit must underlie all successful administrative work, whether it be of a small party or a great survey. It is needless to say that, as in modern business life, character of the highest standard is essential to permanent success and reputation.

To the well-balanced, well-trained student the outlook in geology in America is most encouraging. It is far more so than when I began work with an honored leader in American geology, James Hall, a quarter of a century ago.

During the past year the society lost five fellows by death. Three men were elected to fellowship in the society in connection with this meeting, namely: Ermine C. Case, instructor in geology, etc., in the State Normal School, Milwaukee, Wis.; Arthur G. Leonard, assistant State geologist, Iowa Geological Survey; Charles H. Warren, instructor in geology in the Massachusetts Institute of Technology, Boston, Mass. The new officers for the ensuing year are: President, N. H. Winchell, of Minneapolis, Minn.; first vice-president, S. F. Emmons, of Washington, D. C.; second vice-president, J. C. Branner, Stanford University, Cal. The social side of the meeting was provided by the annual dinner on the evening of January 1, and by a reception on the evening of January 2, by President Rhees and the trustees of the University of Rochester, at which the fellows had an opportunity to meet the leading citizens of Rochester. Abstracts of the principal papers presented at the meeting will be found in the current SUPPLEMENT.

A SCARCITY OF OFFICERS IN THE MERCHANT MARINE.

The rapid increase, of late years, of the United States Navy and the determination to augment the naval forces of the country to an equality with those of European nations is liable to embarrass the merchant marine, which may be confronted with a possible emergency in a lack of material from which subordinate officers for steam and sailing vessels are chosen. This is the case at the present time on the Pacific coast. The scarcity of young seamen is accounted for in the superior attractions of the naval service, which offers a career of possible distinction, financial reward, freedom from drudgery as well as a chance of promotion which the merchant fleet cannot. Times have changed since the efficiency of the country's navy depended upon the supply of seamen which could be drawn at short notice from the merchant fleet; for no matter how efficient a navigator might be, transferred to a modern ironclad he would be of little account for service until after months of industrious training. The distinction between merchant and naval service is so great as to practically make of them two professions.

While the country is fairly entitled to the services of the best trained men available, it ought, at the same time, to encourage and promote, by all means in its power, the supply of educated officers for the commercial marine. The scarcity of this class of men in Western waters arises from the unprecedented growth of commerce in Pacific waters.

The increasing trade of the Territory of Alaska, sure to be increasingly permanent, employs at least 400 vessels, sail and steam, where less than 40 were required four years ago. In the Hawaiian and Philippine Islands commerce is increasing by leaps and bounds, and will before long require hundreds of vessels to accommodate it, while trade with all the ports of all the countries bordering on the Pacific is growing rapidly. All the indications point to an immense augmentation of the national marine. Every shipyard on the coast, from Puget Sound south to San Diego, for three years past has been working at full capacity to execute orders for new ships, and many shipyards of the Atlantic coast have been kept busy in the attempt to supply the Western demand. Though Pacific shipyards have turned out hundreds of vessels, there is apparently no let-up in the demand. The supply of competent officers for the rapidly increasing fleet has been maintained with difficulty. Ship owners of the coast usually rely upon schools of navigation, which are to be found in all the great ports, to supply the subordinate officers, but the competition of the navy, which gives not only an education but subsistence as well to adventurous young men, has reduced the number available for the merchant fleet. A demand has therefore appeared for relaxing or modifying the rule of the United States

Board of Supervising Inspectors, which prevents candidates for licenses from applying before the age of twenty-one years. No person is permitted to apply until after having served three years at sea. The English custom of apprentices begins a practical experience at sea at an early age and permits anyone seventeen years of age to make application for a license and to serve if pronounced competent. The mercantile fleet of England is never without a supply of young officers. The custom of the United States inspectors is to require an interval of one year of service before a new license for an advanced grade is granted; but no matter how studious a young seaman might be, it is rare for him to become master before he has reached the age of thirty or thirty-five years.

It is believed that the rules limiting the age of applicants for licenses, which were adopted in 1878, might be modified to the advantage of navigation by the adoption of the English custom, which is followed so closely in other respects by this country. Such a change in the rules regarding the ages of applicants would, it is believed, render available for immediate service a large number of qualified seamen who are well fitted for the first step in rank, but are excluded from advanced positions on account of youth. A change in the rule would at once release a large number of men who have served a three years' novitiate and are competent for more responsible positions; moreover, by an earlier apprenticeship encouragement would be afforded for young men to make seamanship a profession. Should American shipping be subsidized, as now appears to be probable, a very great increase in the number of this country's vessels would quickly follow, and a lack of experienced officers would be disclosed. Such an emergency would be provided for should the English custom of allowing younger men to apply for officers' licenses, provided in other respects the applicant was properly qualified, be adopted.

SUCCESSFUL WIRELESS TELEGRAPHY AT SEA.

On his arrival here a few days ago, Capt. Hogemann, of the steamship "Kaiser Wilhelm der Grosse," told of the success they had had in working the Marconi apparatus on their last outward trip to Southampton in connection with the fast Cunard steamer "Lucania." It appears the operators on each ship were familiar with the peculiarities of the apparatus on each, and the ships were able to hold aerial converse for nearly three days, until they were about halfway across the ocean.

On December 14, 1901, the "Lucania" sailed three hours before the "Kaiser Wilhelm der Grosse;" when the latter passed Sandy Hook and the "Lucania" was sixty miles ahead Saturday afternoon, they began to exchange wireless messages and signals continued throughout the night. At daybreak the next day, Sunday, the "Kaiser" came in sight of the other ship, and at two o'clock P. M. passed her four miles to the southward. During this time twelve special messages were sent by passengers on the "Lucania" to the "Kaiser" for transmission to the wireless station at the Lizard and thence by land wire to the persons in England to whom they were addressed.

Soon after nightfall on Sunday the lights of the ships were not visible to each other. At noon on Monday their messages showed they were forty miles apart. Early that evening the "Kaiser," when off the Banks, ran into a thick fog; later she came into clear weather and sent the following message:

Twenty-five miles east of Banks. Clear weather.

The "Lucania," then sixty miles astern, replied:

Thanks. Am still in thick fog.

Gradually after this the clicking aboard the "Kaiser" grew weaker until the instrument stopped, when the ships were estimated to be eighty-five miles apart.

On the last trip west the "Kaiser" exchanged wireless messages with her sister ship, "Kronprinz Wilhelm," bound east, when in midocean.

Though they did not sight each other, they exchanged messages and ascertained they were about forty miles apart. They kept up communication for about two hours, several messages being sent by passengers.

The messages received by the "Kaiser" on her trip east were duly transmitted ahead of the arrival of the "Lucania," and when within fifty-five miles of her destination she notified the officials when she would arrive.

Such practical illustrations of the utility of the wireless system of telegraphy leave no doubt as to its value in making the navigation of the ocean safer, for it is a sure preventive of collisions at sea in a fog or at night, by reason of the certainty of advance notification between different vessels.

The wire ropes fastened to some of the most dangerous places in the mountains of the Alps, while they form an important safeguard, have been found to present a new danger as well. They act as lightning conductors, and several tourists were stunned during the past summer, but none of the casualties proved fatal.