may safely be ignored in trying to determine the age and succession of the rocks.

It may be doubted, however, if any class of organisms do not have an interesting and important story to tell provided we learn their language. This has proven to be the case with our American foraminifera at the hands of Cushman. Since forams are generally small and abundant when present at all they stand a much better chance of preservation in both compact limestones and coarse sandy marls than do the tests of higher and larger marine organisms. They have been particularly useful in tracing the Tertiary geological zones around the equatorial belt of the world. In Panama, around the borders and on the islands of the Spanish Main, as well as in our own southern coastal plain, the Foraminifera have proven to be often the only, and always among the most satisfactory types of fossils. Widely distributed in the seaways, rapidly mutating into recognizable differentials, they have been one of the keys to our understanding of the history of equatorial America.

They, like the Bryozoa, are generally small enough to be present in well samples where larger forms are not encountered or are largely smashed beyond recognition by the drills. They have lately been shown to be of profound significance in the location of the oil sands by means of a study of well cuttings in the Texas oil fields. They are almost the only fossils in the thick series of calcareous clays that overlie the oil sands in the Tampico district, and in this last region alone will eventually contribute more in dollars and cents to the wealth of the world than all of the issues of the Congressional Record that have ever been printed.

Probably the laymen requires no introduction to corals. All boys can probably be divided into two classes, at least such was once the case—those who avowed that they were going to be locomotive engineers when they grew up, and those who longed to explore a coral reef or live on a South Pacific coral atoll. Any one who has never experienced the thrill that comes from contemplating the profusion of surging life in and around a coral reef, or does not know the fascinating beauty of even the dead skeletons of coral life would do well to read the popular illustrated account by Vaughan in the last annual report of the Smithsonian Institution.

Corals are all small marine animals, but many of them dwell in colonies, notably the so-called stone corals, and secrete the calcareous skeletons familiarly known as corals. Like the Bryozoa, corals are sedentary except for the short period when they have a free-swimming larval fling as it were. Their ancestors go back as far as the fossil records go, and they have never suffered the obliquity as horizon markers that has at times attached to the Bryozoa and Foraminifera.

Reef corals require definite temperatures and environmental conditions in order to flourish. hence they are useful in retrospective prophecy. Geologically they are especially important during later geological times in Mediterranean regions—in the south of Europe, the Antilles, and the balance of equatorial America. Their contribution to our understanding of the relations and geological history of the Antilles is probably not equalled and certainly not exceeded by any other group of organisms.

In conclusion to cite but a single pragmatic instance of the ultimate commercial value of these monographic paleontologic studies that are published by the National Museum—the exploration for oil in central and northern South America, and the successful interpretation of structure that is the key to commercial success or failure in the far off *tierra caliente* of Colombia or Venezuela, rests very largely on the application of the results of the unostentatious and unadvertised paleontologic studies.

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SCIENTIFIC EVENTS

A NEW OBSERVATORY IN CLEVELAND

CASE School of Applied Science, Cleveland, Ohio, dedicated a new observatory on Columbus Day, October 12, 1920. It is to be known

as the Warner and Swazey Observatory, in honor of the donors, members of the noted firm that have made so many of the largest and best telescopes in this country. Mr. Warner is a trustee of Case School of Applied Science, and both men have long taken an active interest in the work of the school. They secured the site on the brow of a hill overlooking a residential section of East Cleveland, about two miles from the campus, but easily accessible, and erected on it a handsome brick structure filled with all the necessary equipment to carry on college instruction in astronomy. The gift to Case is the most noteworthy addition to astronomical equipment in this section of the country, and especially significant because it is in the home city of the men whose name it will bear.

The observatory is L-shaped, with the tower and dome at the angle. One wing contains two astronomical transits, and a zenith telescope, all from the Warner and Swazey factory. The other wing contains a constant-temperature clock room, provided with two Riefler clocks, and a library room, suitable for class use as well, housing the school's collection of astronomical books. The tower will accommodate a small class where the ten-inch telescope is mounted. The lens was ground by John Brashear, of Pittsburgh. The tube is fitted with every device known to the expert makers to increase its usefulness. In the basement are living apartments for a caretaker, a storeroom, a battery room, and a dark room for photographic purposes.

At the dedicatory exercises, which were held outdoors on the grounds, both Mr. Swazey and Mr. Warner spoke, the former relating some of the firm's experiences in the making and improving of astronomical instruments, and the latter referring especially to the instrument presented to Case, and making the formal presentation. President Charles S. Howe accepted the gift on behalf of the trustees. The main address of the occasion was given by Director W. W. Campbell, of the Lick Observatory of the University of California, on the subject, "The Daily Influence of Astronomy." Professor D. T. Wilson, professor of astronomy at Case, outlined the work done at the school in astronomy, and the services he hoped the school would be able to render the community by means of this splendid observatory.

K. O. Thompson

A SURVEY OF FOREST RESEARCH

"North American Forest Research" published as Vol. 1, Part 4, No. 4, of the *Bulletin of the National Research Council,* Washington, D. C., is a summary of the investigative projects in forestry and allied subjects. It covers the work carried on in 1919–1920 by national, state, and provincial governments, schools of forestry, scientific schools and private interests in Canada, Newfoundland and the United States. The work is a compilation by the committee on American forest research, of the society of American Foresters. It is the first and only authoritative and complete outline of research work in forestry devoted to increasing the knowledge of the best means of producing and utilizing one of the greatest natural resources of the North American continent.

Agricultural research, as exemplified by the agricultural experiment stations, has proved its practical value. Forest research attempts to do for forest production what agricultural research has done for agricultural production.

The bulletin describes the investigative work that is being done in four main fields. (1) Utilization of forest products; (2) Proper handling of the forest and its perpetuation; (3) Proper handling of the range within or adjoining forests; (4) Forest economics, or the relation of the forests and their products to the economic life of the continent.

The survey is said to contain brief descriptions of studies being carried on for practically every important forest region, type and tree and in every province and state in which the forests are an important economic factor in North America.

A SCORE FOR HEALTH ACTIVITIES

The New York State Department of Health has prepared an activities score for cities with