Institute of Technology, who formerly resided in Mobile.

PREPARATIONS are being made to hold the annual conference of the Textile Institute in London in June, when the annual Mather Lecture will be delivered by Dr. Ernest Goulding, of London, who until recently was the fiber expert at the Imperial Institute. His subject will be "Textile Fibers of Vegetable Origin: Forty Years of Investigation at the Imperial Institute." The conference papers will be generally devoted to textile raw materials, dealing with their production and properties. Textile Institute medals have been awarded to J. E. Dalton, the divisional inspector of the Technical Branch of the Board of Education for Lancashire and Yorkshire, and to T. Morley, of Leicester.

THE National Institute of Industrial Psychology has arranged an Easter week-end study school to be held at Exeter College, Oxford, from April 9 to 13. The subject of study will be "Problems of Work and Leisure." Among the speakers will be Dr. A. T. P. Williams, dean of Christ Church, Oxford; Dr. E. K. Le Fleming, chairman of Council of the British Medical Association; E. J. Patterson, head of the Department of Extra-Mural Studies, University College, Exeter; Captain C. R. Coote, and Professor J. H. Jones, professor of economics in the University of Leeds.

THE golden jubilee of the establishment of the first alternating current system in America was celebrated on March 20, under the auspices of the American Institute of Electrical Engineers in forty-eight principal cities throughout the country. The central celebration was held in New York City at a dinner at the Hotel Astor, which was attended by nearly six hundred people. The event commemorated was the lighting, on the night of March 20, 1886, of the village of Great Barrington, Massachusetts, with electric lights supplied from alternating current. The occasion was the first of its kind and demonstrated that alternating current was commercially practicable. Speakers at the dinner were F. A. Merrick, president of the Westinghouse Electric and Manufacturing Company, whose founder, George Westinghouse, backed Stanley in his work; C. W. Appleton, vice-president of the General Electric Company; Gano Dunn, president of the J. G. White Corporation, and Bancroft Gherardi, vice-president of the American Telephone and Telegraph Company. Frank W. Smith, president of the Consolidated Gas Company, was the toastmaster. The first practical transformer was built by a young engineer, William Stanley. At the celebration at Pittsfield, Mass., Cummings C. Chesney, the last surviving associate of Stanley and an honorary vice-president of the General Electric Company, was present. A portrait of Stanley was unveiled and the original Great Barrington experiment was repeated in miniature.

AN Associated Press dispatch reports that Professor Auguste Piccard has ordered a new balloon from the Polish Jablonna factory to ascend to the stratosphere to 30,000 meters (about 98,430 feet). The bag is to have a capacity of 10,000 cubic meters. Professor Piccard, it is said, intends to try the new ascension somewhere in Poland late this summer. He made the first stratosphere flight in 1931, reaching an altitude of 51,775 feet over Germany and Austria. The present record of 72,395 feet was set last November 11 in the United States by Captains Albert W. Stevens and Orvil A. Anderson, of the American Army.

THE board of trustees of the New York Medical College and Flower Hospital has authorized the immediate construction of a new medical college behind the present Flower Fifth Avenue Hospital between 105th and 106th Streets. The new building will be nine stories high and will be along the same lines as the present hospital. The cost will be about $1,000,000. It will extend from 105th to 106th Street and will be 125 feet in depth. The medical college will contain all the latest features in medical college construction. It is planned to accommodate four classes of seventy-four students. There will also be a nurses' training school and room for 200 nurses. It is hoped that the architects' plans will be ready by September and that the building will be ready for occupancy by September, 1937.

DISCUSSION

GLOBIGERINA BEDS AS DEPTH INDICATORS IN THE TERTIARY SEDIMENTS OF FIJI

GLOBIGERINA oozes, composed largely of the shells of pelagic foraminifera, cover very extensive areas in modern seas at depths between 500 and 2,000 fathoms, but under proper conditions similar deposits accumulate in shallower waters.[1] The fact that the Neogene Suva formation of Vitilevu, Fiji, contains beds rich in Globigerinidae has been used to support the idea that at least a part of the formation was deposited in depths of not less than 150 fathoms.

[1] W. H. Twenhofel, "Treatise on Sedimentation," 2d ed., pp. 165–166, 1932.

Since this interpretation is not in complete accord with other types of evidence an alternative explanation is here suggested.

The Suva formation and the conditions under which it was laid down have recently been described in a general report on the island of Vitilevu;[2] this volume includes a section on the smaller foraminifera by Dr. J. A. Cushman. The most recent publications dealing with the formation are a posthumous paper on echinoids by Dr. F. A. Bather[3] and a note on a fossil barnacle by T. H. Withers.[4] These two papers were in press when the general report on the island appeared. The Suva formation in its type area consists mostly of marls ("soapstones") with minor amounts of limestone and conglomerate. Cushman studied samples from two "soapstones" rich in foraminifera. He noted that the material was particularly rich in Lagenidae and this fact, judging from similar Recent faunas from the Philippines, indicated a depth of 100 to 250 fathoms. He also noted the almost complete absence of shallow-water Miliolidae and interpreted this to mean a depth of certainly more than 30 fathoms and in all probability considerably more. He stated that a depth of at least 150 to 250 fathoms seemed a fair estimate. Bather attempted to weigh all types of evidence and concluded that the "soapstones" were probably laid down in water not less than 150 fathoms deep and possibly much deeper. Withers described a fossil barnacle attached to the echinoids described by Bather. He stated that it evidently belongs to a Recent Malayan species which is known to occur at depths in excess of 285 fathoms.

Evidence which seems to oppose the above interpretations is found in the type section of the formation. This section includes a lenticular mass of conglomerate and limestone which is underlain and overlain by typical "soapstones." In the limestone are many heads of reef corals which are still in their original positions of growth. It is known that such corals do not flourish below a depth of 40 fathoms; in fact, so far as I can determine, no living colonies have ever been dredged from a depth greater than 50 fathoms. The coralliferous limestone of the type section grades laterally into foraminiferal limestone. Cushman, who examined a sample of this rock, wrote me[5] that it contained all large foraminifera belonging either to *Operculina* or *Operculinella* and that these indicated a depth of less than 30 fathoms.

[2] H. S. Ladd and collaborators, *Bernice P. Bishop Museum Bull.* 119, May, 1934.

[3] F. A. Bather, *Geol. Soc. Amer. Bull.*, 45: 799–874, Oct., 1934.

[4] T. H. Withers, *Geol. Soc. Amer. Bull.*, 45: 875–876, Oct., 1934.

[5] May 24, 1932.

The evidence detailed thus far may be explained in at least three different ways:

(1) It is possible that the conglomerate and the coralliferous limestone of the type section record a sudden elevation of the sea floor, followed by equally sudden subsidence. This interpretation seems improbable because the area concerned is so very small and because the lenticular mass of conglomerate and limestone in the type section is only one of a number of such masses in the Suva area. The other calcareous masses do not show the reef corals clearly in position of growth, but their fauna and lithology are so similar that it seems probable that all were deposited under similar conditions.

(2) The lenticular mass of the type section may represent a shallow water deposit on a high point of a sea bottom having considerable relief. This possibility is rendered improbable by the fact that over the entire Suva area the beds of "soapstone" are horizontal or show very gentle dips.

(3) A third interpretation takes into account the general distribution of Globigerina beds in the "soapstone" facies of the Suva formation. This facies, though widely distributed over the island, is best developed in the Suva area near the southeast coast. Even in this area only an occasional bed is as rich in Globigerinidae as were the two samples studied by Cushman. Most outcrops of "soapstone" contain but a few foraminifera and many are completely barren. The island lies in the belt of the Southeast Trade Winds and the rich foram beds, therefore, lie to windward. It seems probable that the formation as a whole was laid down in shallow waters—waters which, locally at least, did not exceed 50 fathoms—and that during periods of unusually heavy weather large numbers of pelagic foraminifera were washed in to form an occasional foram-rich layer.

This last explanation does not account for the barnacle described by Withers, but the evidence offered by the reef corals, whose depth range is so definitely limited, seems to outweigh this consideration. It may be that future collecting will extend the range of the barnacle into shallower waters.

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THE OCCURRENCE OF CUPULAE ON LATERAL-LINE ORGANS

A CUPULA similar to the cupula of the crista ampullaris of the vertebrate ear has been observed on the lateral line organs of *Fundulus heteroclitus*. This structure has been studied in living specimens as well as in fixed material.

The organs of Fundulus differ from those of many fish in that, with the exception of a small number in canals on the head, they are exposed on the surface of