estate is turned over to the regents, the income from which is to be used for the purchase of books for the University College of Agriculture and for the support of research fellowships in agricultural chemistry. The will of William A. Henry provides that after other bequests have been made, two thirds of the remainder of the estate is to be given to the university for the purchase of books, pamphlets and manuscripts relating to animal nutrition and animal husbandry.

AN American expedition to the Canadian Arctic will be led by Lieutenant Commander Donald B. MacMillan, who was a member of Peary's supporting party on his expedition of 1909. Button Islands in Hudson Strait are the goal of the expedition, which is to be known as the MacMillan-Bowdoin College Ornithological and Botanical Expedition. Dr. Alfred O. Gross, of Bowdoin College, and at least one other professor and eight undergraduates will share in the adventure. The party will leave Wiscasset, Maine, on June 9, in the schooner *Bowdoin,* returning in September. The Button Islands were named for their discoverer, Sir Thomas Button, who commanded an expedition sent in search of the Northwest Passage more than three centuries ago. The main object of the expedition will be an attempt to complete the life history of certain North American birds, such as especially the fulmar and the kittiwake gull.

DISCUSSION

SILENCING THE "GUNS" OF SENECA LAKE

A MYSTERY of sound has hovered over Seneca Lake, in central New York, for more than a century. Occasionally, in calm weather with quiet water, a faint, low, dull boom is heard distinctly, suggesting a far-distant, muffled explosion. Fanciful stories and legends have arisen about the strange sounds, which have been doubted but well confirmed, widely described and discussed, with tentative explanations more or less imaginative and unscientific. To residents along the southern part of the lake the sounds have become commonplace.

A few well-attested observations have noted areas or patches of disturbance in the lake surface coincident with the booming. A few persons have associated the disturbances of the water surface with escape of gas; but the source and nature of the gas and the physics of the phenomena were yet unexplained.

However, the phenomena and the physical problem are now quite positively solved. The credit belongs to Mr. A. M. Beebee, the geologist and gas engineer of the Rochester Gas and Electric Corporation, who has recognized the association of certain geologic features and physical conditions as having relation to the Seneca Lake phenomena. The explanation found by him requires description of two geologic structures —the deep, buried valley that holds Seneca Lake and the location and rock structure of the Dundee gas field.

BURIED CANYON OF THE SENECA VALLEY

Southwestern America has its Colorado Grand Canyon. Central New York has its great Susqueseneca Canyon. But, while the Arizona trench is open to view as the most superb scenic feature in the whole world, the New York ravine is invisible and must remain unseen.

The only deep, open valleys in eastern America which in dimension and form merit the term "great canyon" are the valleys in the Catskill Mountains. But these have brief horizontal extent. The buried canyon of the Seneca Valley is much over one hundred miles in length, with a depth, below the three-mile width in the southern part, of over two thousand feet. Although completely filled with glacial deposits and the imprisoned lake, and forever invisible, it is yet a physical reality of much interest and educational value.

During the Tertiary Period, preglacial time, while northeastern America had elevation several thousand feet higher above ocean than it has to-day, the north-flowing river which carved the deep Seneca Valley had captured the flow of all the Susquehanna system in New York, and poured its copious flood into the Ontarian River that possessed the great basin now holding Lake Ontario.

The actual depth of the Susqueseneca Canyon is unknown. A drilling at Watkins, near the level of the lake, probed to depth of 1,200 feet without reaching the rock bottom of the ancient valley. The erosional work of the Tertiary river was terminated by the invasion into New York of the Quebec continental ice-sheet, initiated on the alpine heights of the eastern highlands. The overriding of New York by the glacier or glaciers, through probably hundreds of thousands of years, completely filled the Susqueseneca River canyon with glacial and lake deposits and the existing lake. A cross-section diagram of the buried canyon, with some exaggeration in vertical scale, is given herewith.

THE DUNDEE GAS FIELD

In recent years a rapid development of rock gas has been made in the territory between Seneca Lake and Keuka Lake. In the western part of the gas area, the Wayne field, 97 wells have, during two years, reduced the pressure of the gas to near zero. In the eastern field, south and southwest of Dundee, 33 wells have reduced the gas pressure from 770 pounds per

square inch to 480 pounds. The gas is reservoired in the Oriskany sandstone, that has thickness of about twelve feet. The diagram below shows a vertical east-west section across the eastern part of the Dundee gas field and the ancient river canyon, on a line one-half mile north of Rock Stream Corners and three miles south of Dundee Village.

It was theoretically estimated that at the locality of the cross-section the rock bottom of the buried canyon was at least 800 feet below sea-level. The depth of the lake is there 550 feet. But conditions developed by the drill appear to prove that the drift filling ex-

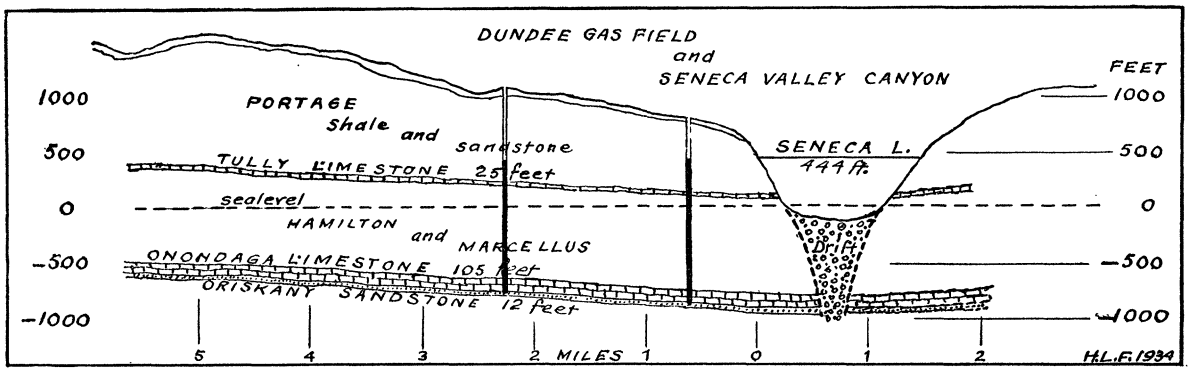

FIG. 1.

amount of compression. The inevitable explosion at the surface, along with the reaction of the displaced water, would produce the low-pitch, dull sound heard infrequently in the southern part of the Seneca Valley.

Northward from Dundee, or in the middle and northern portions of the valley, the gas-bearing Oriskany stratum, having a southerly dip, lies at higher elevations. With less overburden of drift and water any reservoired gas in that territory found easier escape. This condition may account in part for the small volume, or the entire absence, of the gas in the Oriskany north of the Dundee field; even where the folded strata and anticlines make structure favorable for its accumulation.

tends down to at least 900 feet below tide. Two of the wells nearer the lake, indicated in diagram, are flooded with water to the precise level of the lake, 444 feet. This implies a more effective water communication between the lake and the gas wells than could be permitted by the impervious rock strata overlying the Oriskany. It is predicted that the numerous drill holes on the west will also fill with water to the lake level as the gas is withdrawn. Evidently the porous Oriskany sandrock abuts against the glacial drift in the bottom of the canyon, as the diagram suggests.

With knowledge of these relations in the geologic structure Mr. Beebee recognized that the gas in the Oriskany, and under great compression, must have found some escape, probably for many centuries, by migration into the Seneca Valley drift; and such volume of gas would have ultimate escape upward through the water of the lake. And here was explanation of the Seneca Lake guns.

It is evident that any gas pushed into the valley drift would work its way upward under the progressively lower vertical pressure. And when a bubble of gas finally reached open water at the bottom of the lake it would rapidly ascend. With the steady reduction in pressure during its ascent the bubble would correspondingly expand. Starting at the lake bottom, under compression, in ascending through 500 or 600 feet of water it would expand and enlarge twenty to forty times its original volume, depending on the

It appears probable that the depletion of gas from the Dundee field must have been in effect ever since the removal of the latest ice-sheet, thus allowing open-valley condition. Certainly the rapid withdrawal of the gas by human interposition will quickly extinguish the supply for the Seneca Lake artillery. With no sounds reported for the last summer it is probable that even now the famous "guns" are silenced forever, and are only a memory of the mysterious and legendary past.

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A CODE FOR CHEMISTS?

THE strong movement among scientific men in commercial work in opposition to codes affecting testing and research laboratories is based on the following reasons:

A. The thoroughly unrepresentative character of the code proposed for all testing and research activities.

B. That laboratories would be required to furnish information concerning their activities to Code Authority, thereby disclosing names of clients and other confidential information concerning dealings with clients.