general to be of value in diagnosis or prognosis. It is possible that the significance of the reaction has been largely overlooked in the efforts to apply it to practical purposes. It may, as Fahreus has already suggested, play a rôle as a factor in the defense mechanism of the body against infection. Fever easily lessens the suspension stability of the blood by causing an increase in the viscosity of the plasma. As a result there is a change in the electrical charge, the erythrocytes clump and settle rapidly. It has been demonstrated that both erythrocytes and bacteria carry negative charges. The assumption would then be that a decrease of the suspension stability of the blood would also favor clumping of bacteria circulating in the blood stream. If the hypothesis is correct that clumping of bacteria is the first step in the successful disposal of bacteria which gain entrance into the body it would appear that the ease with which the suspension stability is disturbed is of considerable significance. It would be logical to consider fever, which alters suspension stability, as one factor in protection against infection.

A number of experiments recently performed indicate that bacteria of various kinds (pneumococci, Friedländer's bacilli, typhoid bacilli) tend to aggregate and clump in plasma from blood exhibiting a marked decreased suspension stability but not in plasma obtained from a normal individual. The clumping is not striking but can often be observed microscopically. If a weak solution of gum acacia is added to increase the viscosity further, the reaction is markedly enhanced. For instance, acacia was added to one of two parallel series of tubes containing increasing dilutions of typhoid antiserum. Typhoid bacilli agglutinated in a far higher dilution of antiserum in the row of tubes containing the acacia. When typhoid bacilli are added to a 5 per cent. solution of acacia, motility is instantly retarded or stopped. Theobald Smith[1] has recently noted a similar phenomenon in the agglutinating action of agar on bacteria.

A few experiments *in vivo* were performed. Mice were inoculated intraperitoneally with a heavy suspension of type I pneumococci and divided into 3 groups. One group was injected intraperitoneally with 0.5 cc of a 10 per cent. solution of acacia, one group with .01 cc of type I antipneumococcus serum and the third group with acacia and antiserum. The mice were killed after ½ hour and 1 hour periods. Pneumococci and leucocytes showed much more clumping in the mice injected with acacia. Occasionally in the mice receiving acacia most of the pneumococci had disappeared, only a few clumps were seen attached to the large agglomerations of leucocytes. In the mice receiving the minute amount of immune serum, pneumococci were found in great numbers, often evenly distributed and not clumped. The observed differences in the three groups were most striking within one hour after inoculation.

It appears, from these experiments, that an increase in the viscosity both *in vitro* and *in vivo* enhances the agglutinative property of specific immune serum. Whether the increase of viscosity of blood plasma which accompanies fever likewise favors agglutination is as yet uncertain and is being investigated.

HOBART A. REIMANN

DEPARTMENT OF MEDICINE,
UNIVERSITY OF MINNESOTA

[1] T. Smith, SCIENCE, 74, 21, 1931.

FOSSILS FROM THE EASTERN FLANK OF THE SIERRA NEVADA, CALIFORNIA

THE Sierra Nevada of California has been described as a huge fault block, tilted toward the southwest.[1] The northern end of this mountain mass departs considerably from so simple a form, and consists of several parallel ranges with intervening troughs,[2] but in the central and southern portions, the ideal condition of a simple, though dissected, fault block, seems to be much more nearly realized. The lofty escarpment, which limits the southern half of the Sierra Nevada on the eastern side, is composed mainly of plutonic intrusions, thought to have invaded an older series of igneous and sedimentary rocks in upper Jurassic time.[3] Occasional roof pendants of the older rocks occur along and west of the escarpment, at least as far south as Owens Lake, and farther north, in the vicinity of Mono Lake, they become quite large and abundant.

It would be desirable, both from a scientific and a practical standpoint to determine the age of the older rocks, and to correlate them with similar formations in adjoining regions. Unfortunately, however, fossils, although they have been reported from the western slope of the range, and from the northern portion, by various writers, are extremely rare along the eastern escarpment. Also, the geologic structures in the roof pendants are very complex, because of the intense folding and faulting that probably accompanied the intrusion of the plutonic rocks. The lithologic similarities are of doubtful value.

[1] Turner, H. W., "The Rocks of the Sierra Nevada." *U. S. Geol. Survey Fourteenth Annual Rept.*, pt. 2, pp. 435–496, 1894.

[2] Lindgren, Waldemar, and Knowlton, F. H., "The age of the auriferous gravels of the Sierra Nevada, with a report on the flora of Independence Hill," *Jour. Geology*, vol. 4, pp. 881–906, 1896.

[3] Turner, H. W., "The Pleistocene geology of the south central Sierra Nevada with especial reference to the origin of Yosemite Valley," *California Acad. Sci. Proc.*, 3d ser., Geology, vol. 1, pp. 261–321, 1900.

Recognizable organic remains have been found by Walcott[4] in a small, isolated area of lower Cambrian rocks at the base of the Sierra west of Big Pine, in Inyo County, and provisional Triassic forms from the roof pendant at Mineral King have been noted by Turner.[5] As yet, no report of fossils from any part of the escarpment between Big Pine and Mono Lake has been seen by the writer. For this reason, it may be of interest to record the recent finding of probable mid-Devonian fossils in crystalline limestone (marble) on the Sierra Nevada escarpment, about 28 miles south of Mono Lake, by Mr. W. E. Selbie, a prospector. The writer has spent three summers in geologic field work in this region, part of which was done under the auspices of the California State Division of Mines, and supervised by Dr. Olaf P. Jenkins, chief geologist. On various occasions during the investigation, Mr. Selbie rendered valuable assistance. He became interested in the progress of the work, and in the possibility of finding fossils in the older rocks.

A few months ago, Mr. Selbie sent to the Geology Department at Cornell University, a package containing two fossils, one a large crinoid stem (.4 inch in diameter), and the other a small brachiopod. These remains are stated by him to have been found in a bed of crystalline limestone, which outcrops on a mountain side a few hundred yards east of Laurel Creek, in southwestern Mono County. They were examined at Cornell University by Professor G. D. Harris, who states that the age of the fossils is uncertain, but they somewhat resemble mid-Devonian forms. The brachiopod is thought to be near *Leiorhynchus sp.* (?).

There can be little doubt that the Paleozoic rocks along the escarpment range in age from lower Cambrian to Devonian. Whether or not the whole of the Paleozoic section is represented remains uncertain. It is hoped that future investigation will yield further data to confirm those now at hand, and to enable further conclusions to be made. The finding of more fossils, over a wider area, would not only make it possible to recognize the formations present, but would offer a valuable check on interpretations of geologic structures in the older rocks.

EVANS B. MAYO

CORNELL UNIVERSITY

NAMING DISORDERS OF SPEECH

REALIZING the need of a systematic international classification of disorders of speech and voice, the American Society for the Study of Disorders of Speech appointed a nomenclature committee three years ago to prepare such a classification. The committee felt that such a classification should not be published in entirety, however, until accurate definitions of every disorder of speech listed had been approved by at least the leaders in the field of speech correction.

In order to give all workers in this new field of science an opportunity to criticize the best definitions the committee were able to obtain, the committee has just published a tentative "Dictionary of Terms Dealing with Disorders of Speech," and requests those interested to revise every definition which does not adequately describe a given disorder of speech as they have actually known it, and to send the revision to the committee. Only so can an accurate revised edition of this dictionary accompany the publication of the final international classification of disorders of speech and of voice.

SAMUEL D. ROBBINS

SECRETARY AND CHAIRMAN OF NOMENCLATURE COMMITTEE

A CURIOUS FISH STORY

A QUITE curious case of gastric erosion of a fish-hook that had been swallowed by a fish has come under my observation. Many experienced fishermen tell me that they have seen nothing quite like it. At about eight o'clock in the evening of July 1, Professor C. E. Hagie, of the History Department of Western State College, hooked a twelve-inch Loch Leven trout while fishing on the Gunnison River. When this fish was cleaned it was discovered that it had at some previous time swallowed a No. 2 Carlisle bait hook. The barb of this hook had penetrated the wall of the stomach and all of the curvature of the hook to a point on a level with the tip of the barb lay in the body cavity. The straight shank of the hook lay entirely in the stomach. Outside of the stomach the hook was in good condition; inside the stomach it had been so eroded by the gastric action that but a mere filament of the former metal was left.

An interesting question as to how long it may take for such erosion to be brought about presents itself. According to the best opinion that I can get at the hands of expert fishermen of long standing, a twelve-inch trout, in the Gunnison River, takes about three years to reach this size. Trout are put into the river as fingerlings. They grow rapidly and, in a year, according to food conditions, reach a length of about seven inches. In another year they reach a length of from eight to ten inches. The third year they may reach a length of twelve inches.

It would seem certain that the amount of erosion of the fishhook in the stomach of the fish in question would preclude the possibility of its having been swallowed during the present fishing season. This

[4] Walcott, C. D., "Lower Cambrian Rocks in Eastern California," *Amer. Jour Sci.*, 3d ser., vol. 49, pp. 141–144, 1895.

[5] Turner, H. W., *op. cit.*, p. 451.