the barrel, the firkin, the dry quart, the small measure, the peck and the bushel have been amortized. Peace to their ashes! The struggle is now on between the long ton, 1,016 kgs., and the short ton, 907 kgs.

But we can not say too much about British deliberation in these weighty matters; for do we not (we readers of SCIENCE) buy coal and get 2,000 pounds in a ton; while the coal dealer and the United States government get 240 pounds more on each ton? Can it be that we belong to a privileged class?

ALEXANDER MCADIE

CORRECTION

A SMALL but rather serious error occurred in my article, "Note on the fusarium wilt disease of bananas," appearing in SCIENCE of December 8, 1922. In lines 14 and 13 from the end, page 664, the word *inoculated* should be *un*inoculated.

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QUOTATIONS

THE VIRUS OF INFLUENZA

A RECENT outbreak of influenza in South Africa afforded to Sir Spencer Lister, the well-known bacteriologist, an opportunity of making some important observations which he describes in the *South African Medical Record* of November, 1922. He recalls that when influenza made its appearance in Johannesburg during the pandemic of 1918, Pfeiffer's bacillus—relatively absent in that community before the outbreak—was found by him in no fewer than 53 out of 56 cases dying with pulmonary complications; but his attempts to detect a filter-passing virus either by experiment or by culture failed. It is the more interesting, therefore, to learn that in this recent outbreak he has succeeded in satisfying himself of the presence of an anerobic filter-passing organism similar to that defined by the careful studies of Olitsky and Gates in New York, and confirmed by Gordon in the London outbreak during the early months of 1922, as reported in our columns on August 19, 1922. By sowing in Noguchi medium the filtered naso-pharyngeal washings taken within thirty-six hours of the onset of influenza Lister succeeded in obtaining a culture of the filter passer in 5 out of 15 cases. He comments on the ease with which the presence of this very minute organism may be overlooked without unusual concentration of gaze and accurate focusing. The stain which he found most successful for demonstrating the presence of the organism in films was Loeffler's alkaline methylene blue, the latter a specimen of Grubler's pre-war stock. The size of the organism was 0.15 of a micron, which is smaller than the organism found by Gordon, who estimated it to be 0.2 of a micron in diameter—a difference probably to be ascribed to the different methods of staining, as the latter observer employed prolonged staining in Giemsa's solution; he has seen preparations of Lister's organism, and agrees that it is identical with that observed by him in films of the nasal secretion and in cultures from the London cases. Lister has taken matters a stage farther than previous investigators by carrying out a preliminary experiment on human volunteers with cultures of this filter-passing organism. Sixty c. cm. of a culture in the second generation were divided into three portions—one third was placed in a spraying bottle, one third passed through a Berkefeld V filter and the filtrate placed in a second bottle, and the remaining third treated for half an hour to 56° C. and placed in a third spraying bottle. Six individuals were then sprayed with the unaltered culture, seven received the filtrate, and six the heated culture, about 1.5 c. cm. being sprayed into the nose and throat of each volunteer. The only one of these nineteen volunteers who complained of any discomfort had received the unaltered culture, and developed a typical attack of uncomplicated influenza beginning nineteen hours after spraying. The minute bodies were observed in smears of his nasal secretion, and a nasal washing was filtered through a Berkefeld candle. This filtrate on cultivation in Noguchi medium gave in five days a profuse growth of the organism. Two other individuals also in this first group that received the unaltered culture had a slight rise of temperature, and one of them showed a well marked leucopenia. Although, as Sir Spencer Lister is careful to point out, this result is not sufficiently conclusive to establish the filter passer as the cause of influenza, it is distinctly

encouraging, and further reports of his enterprising investigations will be awaited with interest.—*The British Medical Journal.*

SCIENTIFIC BOOKS

Geology of the Tertiary and Quaternary Periods in the Northwest Part of Peru. By T. O. BOSWORTH. With an account of the Paleontology by Henry Woods, T. Wayland Vaughan, J. A. Cushman and others. Macmillan & Co., 1922.

This book of 434 pages is devoted to the post-Cretaceous geology of the coastal strip, fifteen to forty miles wide in northern Peru, and extending from Tumbez southward to Payta, a distance of about one hundred and fifty miles. It is made up of five rather distinct and largely uncoordinated parts: (1) Tertiary Geology; (2) Tertiary Paleontology; (3) Quaternary Geology; (4) Desert Geology; (5) Occurrence and Exploitation of Petroleum; all but the second being by the author. The book is a result of several years of professional work in the region and is a most important addition to our knowledge of it.

The geological elements comprise the Andean chain of the Amotape Mountains on the east, consisting of slates, quartzites and granites of Paleozoic and Mesozoic age, and lying west of these mountains the present desert plain made up of Eocene and Miocene, littoral and shallow water formations, and a series of Pleistocene wave cut terraces and beaches or Tablazos. The Oligocene Ovibio formation, the lower Miocene Heath formation, the upper Miocene Talara formation and the Pliocene Payta formation described in this region by Grzybowski and others are shown not to exist.

The Eocene consists of two formations with a total thickness estimated to be more than twelve thousand feet and consisting of clay shales, more or less calcareous sandstones and beach pebbles. The oldest of these, the Negritos formation, is especially rich in gastropods and is divided into an older Turritella series and a younger Clavilithes series. The fauna is shallow water and largely molluscan, but containing a few crustaceans and fish teeth. It shows a marked resemblance to that of the Wilcox and lower Claiborne of our gulf states and is indicative of a seaway between the two regions. Frequent mention is made of the presence of a species of Aturia in the Negritos. The reviewer's collections from that formation contain no Aturia but do contain abundant specimens of a large Hercoglossa.

The Negritos is followed by some five thousand feet of lithologically similar beds constituting the Lobitos formation. The fauna is essentially similar to that of the Negritos but sparser, and contains Foraminifera of several species, notably the genera *Lepidocyclina* and *Orthophragmina,* and is considered to be upper Eocene in age.

The Zorritos formation, which makes up the balance of the Tertiary, is estimated to be about five thousand feet thick and is considered as Miocene in age, although the author seems to be in doubt as to there being any break between it and the Eocene Lobitos formation. The author did little detailed work in the more northern region where the Zorritos is well exposed, consequently but three pelecypods and six gastropods are described from it. In the paleontology of the Zorritos formation published by Spieker[1] before Bosworth's book reached America, there are described forty-four gastropods and fifty-seven pelecypods, and the age was definitely proven to be lower Miocene. Bosworth does not mention the three hundred feet of variegated, partly continental and lignitic Zorritos which is so conspicuous in the Zorritos district.

The Quaternary is represented by a series of four (possibly more) sea-cut terraces, the oldest of which reached inland almost to the Amotape Mountains. These terraces (Tablazos) are named the Mancora, Talara, Lobitos and Salina and record extensive oscillations of level. It seems unfortunate that for the second Bosworth uses a name already used for a supposed Miocene formation in this region, and that for next to the last he uses a name already applied by him to an Eocene formation in the region. These tablazos consist of thin sheets of light colored beds of shell rock, marl, sand, sandstone and conglomerate, very variable laterally, quite fossiliferous, and lying practically horizontally on a plane of marine erosion on the much faulted underlying Tertiary. The pebbles are beach pebbles of volcanic rocks from the western Andes, sub-angular quartz-

[1] Spieker, E. M.: *Johns Hopkins Studies in Geology,* No. 3, 1922.