colonies arising from the tracks of flies walking across the gelatine, etc.

The method consists of placing the uncovered Petri dish against photographic paper in a dark corner of the laboratory, bringing forward into the light, and returning to a dark corner for development and fixing. I have had very good results by using Azo hard X exposed to a medium light for five seconds. Good results can also be obtained by using blue-print paper exposed to bright sunlight for forty-five seconds. This paper requires less care in handling in the light and only water for fixing but must be fastened to the Petri dish by spring clip or gummed label to prevent moving during the long exposure.

The result of this direct photography is a positive; that is the white bacterial colonies on the Petri dish appear white on the print; not black as they would on a negative. Careful comparison of the direct prints with ordinary photographs made from a negative shows no loss by the shorter method.

A. A. Cope

SHELL-SHOCK IN THE BATTLE OF MARATHON

To the Editor of Science: Herodotus, desrcibing the battle of Marathon, 490 B.C. (Book VI., section 117), says:

> The following prodigy occurred there: an Athenian, Epizelus, son of Cuphagoras, while fighting in the medley, and behaving valiantly, was deprived of sight, though wounded in no part of his body, nor struck from a distance; and he continued to be blind from that time for the remainder of his life. I have heard that he used to give the following account of his loss. He thought that a large heavy-armed man stood before him, whose beard shaded the whole of his shield; that this specter passed by him, and killed the man that stood by his side. Such is the account I have been informed Epizelus used to give.

Is this, perchance, the first account of "shell-shock"?

Dean A. Worcester

THE AURORA OF AUGUST 11 AT BURLINGTON, VERMONT

On August 11, at approximately 10 P.M. (E'n "Summer" Time), the aurora borealis, as seen in Burlington, Vt., appeared as follows: On a cloudless night with a nearly full moon, and east-west band of light, from horizon to horizon, increased in brightness as each end broadened northward. The zenith became brilliant violet, an inverted bowl of shifting color. Practically the whole sky was bright: and especially just above the northern horizon intensely white rays shot up toward the zenith. Near the violet center, pale pink and green occasionally showed. The lights lasted for several minutes, lingering longest near the northern skyline.

Jean Dickinson

WILL THERE BE ANOTHER AURORA ABOUT SEPTEMBER 7-8, 1919?

The intensity of the magnetic storm and the brilliance of the aurora of August 11–12 would indicate a disturbed region on the sun, the next presentation of which, opposite the earth about September 7–8, may produce another aurora. Such was the case April 4–6, 1918, following the brilliant aurora of March 7–8.

Charles F. Brooks

QUOTATIONS

LABOR AND SCIENCE

Are the great industrial countries moving in a vicious circle? The manifesto of the American Federation of Labor, which we publish [reprinted from Science] in another column, takes this view, and moreover, suggests a remedy. There is an "ever-increasing struggle of the workers to raise the standard of their living." Hitherto this has implied increased wages and shorter hours, or less production at higher cost. But now the "limit has been reached after which the average standard of living can not progress by the usual means of adjustment," by which are meant strikes, politicians' promises and public subsidies. If bankruptcy, moral and financial, is not to ensue, production, says the manifesto, must be increased by research and by the utilization in industry of the results of research. The vital necessity of scientific methods is clearly and cogently stated. In an age of steel and telegraphy, of aseptic surgery and of preventive medicine, of Mendelian breeding

and of tanks and poison gas, science is accepted as a paying proposition; but it is still too often looked on as a consultant to be called in special cases, or as a piecework artisan to be paid by the job. The manifesto proclaims a wider and a truer view. It distinguishes between "scientific" and "technical" research—that is to say, between disinterested and utilitarian explorations of nature. The former are demanded by those who know history; the latter mesmerize the bureaucracy. Labor demands a program of research in both senses; it declares the value of the advancement of knowledge to be many times greater than its cost; and it insists that many urgent problems can find wise solution only through scientific and technical research.—London *Times*.

SCIENTIFIC BOOKS

The Schrammen Collection of Cretaceous Silicispongiæ in the American Museum of Natural History. By MARJORIE O'CONNELL, Ph.D. *Bulletin of the American Museum of Natural History,* Vol. XLI., Art. I., pp. 1–261, Plates I–XIV., Map and five text figures. Aug. 1, 1919.

In 1914 the American Museum purchased a collection of 800 specimens of fossil Silicispongiæ, comprising 116 genera and 222 species, and purporting to be types (Belegestücke) used by Dr. Anton Schrammen of Hildesheim in the preparation of his important monograph on the Cretaceous Silicispongiæ of northwest Germany. This material was entrusted to Dr. O'Connell for arrangement in the exhibition hall of the museum, in the course of which work she undertook a careful comparison of each specimen with the descriptions and illustrations in Schrammen's monograph. This led to the discovery that the term "Belegestück" was used in a very loose sense for material representing not only the true types, but also all material collected from type localities, and so included supplementary types (apotypes) as well as typical specimens (icotypes), the total of 358 types including only 86 primary types (with only 5 holotypes). This led Dr. O'Connell to a careful evaluation of the standing of each one of these specimens, which proceeding has greatly enhanced the value of the collection. But beyond this, Dr. O'Connell has gone most thoroughly into the synonymies of the genera and species, Schrammen's work in this respect being misleadingly incomplete, and so she has produced a distinct contribution to the literature of the Silicispongiæ, and supplemented Schrammen's monograph in a manner for which students of these organisms owe her thanks. This constitutes the major part of the work before us, being Chapter IV., and comprising pp. 97–207 of the *Bulletin*.

The first 97 pages of the bulletin however, are of broader scope, and will be of general interest, not only to students of paleontology but to those of stratigraphy as well. The introduction deals with the classification of the sponges and makes the latest classification by Broili (Zittel Grundzüge, 1915), and Schrammen available to American students. Chapter I. (pp. 8–30) gives a review of the development of the science of spongiology, dealing first with the investigations on recent, and then with those on fossil species. The history of investigation on recent forms is divided into five periods: (1) From the days of Aristotle to the seventeenth century; (2) period of determination of systematic position (1600–1750); (3) period of anatomical discoveries and classification (1750–1825); (4) period of detailed microscopic studies (1825–1874), and (5) period of modern investigations (1875–present), which opens with the first paper published by F. E. Schulze. The history of palæospongiology is thus summarized by Dr. O'Connell:

> In going through the literature on fossil sponges, one is struck with the close parallelism in the development of thought in the study of fossil and recent forms but one sees epitomized in the paleontological literature of two hundred years what is spread over two thousand years in zoological literature. The besetting difficulty for both groups of investigators was the determination of the best method of work, and, until this was discovered, all classifications were unsatisfactory and often artificial.