pear- or kidney-shaped or more or less irregular, rod-shaped, and branched. They are readily stainable, generally motile, and fairly resistant. They may multiply by fission or budding, are formed from vegetative cells or from the symplasm, and may give rise to vegetative cells or to the symplastic stage. (3) Exospores, unstainable regenerative bodies. (4) Endospores, produced by vegetative cells or by regenerative bodies. Conditions for formation are similar to those for the formation of regenerative bodies. (5) Arthrospores, easily stainable, but withstand drying better than heating. They are formed by the segmentation of vegetative cells and transformation of the joints into fairly resistant spherical bodies. (6) Microcysts, very similar to arthrospores. They are formed by vegetative cells growing and becoming spherical with a thickened membrane. After a rest period they may become vegetative cells, germinate like spores, or may break up into two, three, or four segments, which become vegetative cells. In addition to their reproductive function exospores, endospores, arthrospores, and microcysts are, in the first place, resting-stages.

Besides the formation of the symplasm a second mode of interaction between the protoplasmic bodies in bacterial cells has been observed. This consists in the union of two or more cells, and is termed "conjunction" by the author. Conjunction is most common in cultures two to four days old, and generally precedes the formation of gonidia, reproductive bodies, exospores, and endospores.

The publication brings together an overwhelming amount of evidence as to the existence of the various forms distinguished by the author. The arrangement of these forms in the life-cycles of the bacteria is a point on which further information is desirable, but this will, doubtless, be provided in the later publication in which the observations of the author are to be dealt with in detail. From the point of view of the student of bacterial morphology the publication must be regarded as one of first-rate importance. The general worker on bacteriological problems will also find in it much information of a highly valuable nature, and doubtless will be able to confirm the existence of many of the forms observed from the results of his own experience.

Miners' Lamps.[1]

Of late years there has been a tendency on the part of makers of miners' safety lamps to employ thin sheet-metal, perforated with holes of small diameter, to serve the same purpose as wire gauze—that is to say, with holes large enough to admit of the passage of the necessary volume of air through them, but small enough to arrest the passage of flame. It will be recalled that the lamp invented by George Stephenson depended upon perforated sheet-copper for its impermeability to flame. A further innovation that has recently been gaining ground is the addition of a short glass cylinder, known as the "combustion tube," to the lower end of a metal chimney suspended directly above the flame of the lamp. This contrivance promotes a better circulation of air in the lamp, keeps the products of combustion separate from the incoming air, and, as a consequence, produces a brighter flame and enhances the lighting power of the lamp.

Metal chimneys have long been employed with this object, notably in the Mueseler lamp—the only kind of safety lamp permitted in Belgian mines—but as the bottom of the metal chimney cannot be brought lower down than the top of the flame without obstructing the light, the benefit derived from their use is limited. In this respect the glass extension is distinctly beneficial.

Having regard to the changes of this kind which were taking place in the construction of safety lamps, the Home Secretary appointed the Miners' Lamps Committee in 1919 to inquire into, and report on, various questions relating to safety lamps, and the Secretary for Mines re-appointed the same Committee in January, 1921. Up to the present the Committee has issued five Memoranda, of which the last two, Nos. 4 and 5, issued in the end of last year, deal with the use of perforated metal plates and chimneys respectively.

The experiments described in Memorandum No. 4 were made to ascertain the relative resistance to the passage of flame possessed by metal plates of various thicknesses perforated with holes of various diameters; and those described in Memorandum No. 5 to ascertain the relative resistance of chimneys of various lengths and diameters at top and bottom and extending to higher or lower levels above and below the wire gauze diaphragm by which they are supported.

The results are tabulated in both memoranda and in the letter to the Secretary for Mines which accompanies each the chairman of the Committee makes certain recommendations and suggestions founded on these results. The total cost of the Committee's inquiry to date (November, 1921) is given as 555*l*.

[1] Mines Department. Miners' Lamps Committee. Memorandum No. 4: Record of research on the passage of flame through perforated plates and through perforated tubes of small diameter. Pp. 12+6 plates. (H.M.S.O.) 9*d*. net. Memorandum No. 5: Record of research on the passage of the flame of an explosion from within miners' lamps fitted with chimneys. Pp. 12. (H.M.S.O.) 6*d*. net.

Pébrine in Silkworms.

In an interesting report on pébrine in silkworms in India (Memoirs Dept. Agric. in India, Bacteriological Series, vol. 1, No. 8, November, 1920, pp. 75, 26 plates), Mr. C. M. Hutchinson gives an account of experimental work on methods of infection. He found infected ova in the pupal ovary, and the infection is traced in the egg, larva, and pupa—and recounts the life-history of the causal organism, *Nosema bombycis*. The Pasteur method of searching for the organism, devised more than fifty years ago, consists in crushing the body of the moth in a mortar, and examining, under a magnification of about 600, a small fraction of the resulting powder in a drop of water, to ascertain if the characteristic spores of Nosema are present. This method, according to the author, has not been attended in India with any approach to the measure of success which has been attained in Europe. The chances of non-detection of infected moths, and the risk of spreading the spores (due to careless application of the method) in the rooms used for examining the moths, are considerable—the author states that he has seldom failed to find Nosema spores in the floor dust from these rooms, even in cases where the floors were of concrete. In Europe a period of several months elapses between oviposition by the moth and hatching of the eggs, so