employed in the investigations on which the view is based.[1] Considering that chlorophyll bodies and plastids generally are unknown in hyphæ of all kinds, and in view of the recent researches on the part played by nuclei in cell formation, we had a right to expect some allusion to these matters in a research dated 1884. As regards the optical powers employed, two instances will suffice. Fig. 7 is stated to be highly magnified; 7*a*, a more highly magnified part thereof, is only enlarged 275 diameters, and this is the highest power used! Fig. 7*a* is stated to show "the separated gonidia [of *Psoroma hypnorum*] inclosed in the cellules [of the cortex], after Nylander." It represents, in fact, a homogeneous green spot separated by a narrow blank space from the concentric double black outline. Fig. 2*a*, "Gonidia [of *Lecanora gibba*], as seen inclosed in the cellules of the pseudo-parenchyma, magnified about 270 diameters," only differs from 7*a* in the black outline being single instead of double; and these two figures are the only ones professing to illustrate the actual formation of the gonidia!

So much for the formation of the gonidia from the hyphæ or the derived cellular cortical layer. Of the inverse origin of hyphæ from gonidia, the author gives no hint; yet, surely this should be taken into consideration also in a complete account of the lichen as a simple organism? Mr. Crombie states that "*Sirosiphon*, *Hormosiphon*, *Scytonema*, *Stigonema*, *Cora*, *Dichonema*, *Chroolepus* or *Trentepohlia*, *Nostoc* and *Glœocapsa* (at least in part), *Gongrosira* and *Phyllactidium*, have now to be removed from the class of the algæ," having, "in consequence of the discovery of their fructification, been proved to be lichens." Such papers as those of Bornet and Johow are in complete discordance with this view, except as regards *Cora* and *Dictyonema* (or *Dichonema*). Mr. Crombie seems to be unaware that the discovery of a *hymenomycetous* fructification in these very genera of lichens by Mattirolo ("Contribuzniohe allo Studio del genere *Cora*," in *Nuov. Giorn. Bot. Ital.*, vol. xiii. 1881), confirmed and extended by Johow, is regarded by most botanists as the very coping-stone of the symbiosis theory founded by De Bary and Schwendener; but their papers are not referred to.[2]

I may say that I have personally hunted through many a *Nostoc* colony without finding a trace of hyphæ; and there is no record of the transmutation of a *Nostoc*-cell into a lichen or fungus hypha. Yet this is wanting to show that *Nostoc* is the immature form of a lichen. So I have frequently seen *Glœocapsa* colonies permeated by hyphæ, which could often be traced to septate (probably lichen) spores, but, like all other observers, never to a green cell. *Gongrosira* has been demonstrated by Stahl to be at least in part the resting form of *Vaucheria* ("Die Ruhezustand der *Vaucheria geminata*," in *Bot. Zeit.*, 1879, p. 129, t. ii.), and must henceforward rank only as a form-genus. *Phyllactidium* is another form-genus, comprising young forms of genera so distinct as *Coleochæte* and *Mycoidea*, Cunn.

I have abstained from reviewing the purely critical appreciation of the works of Schwendener, Bornet, Rees, Stahl, &c., though Mr. Crombie's treatment thereof seems to me decidedly offhand. But I trust that in my remarks on his positive arguments in favour of the unitary theory of lichens, I have not exceeded the bounds set by the respect all must feel towards his honest and arduous work on the classification of so difficult a group.

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UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—A temporary Pathological Laboratory has been fitted up for Prof. Roy, and it is proposed to vote 400*l.* for apparatus.

Downing College has now a capital opportunity of appointing a scientific man as Master, owing to the death of Dr. Worsley.

Mr. C. Dixon has been appointed a Demonstrator of Mechanism and Applied Mechanics in place of Mr. J. H. Nicholls, resigned.

A discussion took place last Friday on the Report as to a new Chemical Laboratory. Prof. Liveing stated in forcible terms the inadequacy of the present laboratories, which were inferior to those of many schools. He could not classify students; he had no class-rooms, and literally no provision for research. Cambridge was subjected to severe competition; a new University in the north of England was supplying considerable means of research; and before long it must be expected that the plans for a Teaching University for London would be carried out. It would be economical to make good provision while they were about it. The estimated sum of 30,000*l.* was as low as would provide suitable accommodation. The chief objections urged against the proposal were as to the magnitude of the sum in proportion to other requirements and to the funds at the disposal of the University. Prof. Humphry made a vigorous appeal to men of wealth, who might find in Cambridge many objects worthy of their munificence. Cambridge laboured under the double disadvantage of being poor and of being thought rich.

THE following courses of Lectures and Demonstrations in special branches of Physics will be given in the Physical Lecture Room and Laboratories of the Science Schools, South Kensington:—(1) Connection between Sound and Music. Six Lectures and Demonstrations by R. Mitchell, at 2 p.m. on February 23, 25, 27, March 2, 4, 6. (2) Certain Optical Measurements. Eight Lectures and Demonstrations by H. H. Hoffert, B.Sc., at 2 p.m. on March 9, 11, 13, 16, 18, 20, 23, 25. (3) Electrical Measurements. By C. V. Boys, A.R.S.M., at 2 p.m. on April 13, 15, 17, 20, 22, 24, 27, 29; May 1, 4. (4) The Chemical Action of Light. By Capt. W. de W. Abney, F.R.S., at 2 p.m. on May 6, 8, 11, 13, 15, 18, 20, 22. The above courses are open without fee to all second and third years' regular students of the Normal School of Science and Royal School of Mines, on their giving to the Registrar a written recommendation from the Professor or Lecturer whose classes they are attending at the time. The fee to others attending the courses are: for each separate course, 10*s.*; for all the courses, 30*s.* Such fees are payable in advance to the Registrar of the Normal School of Science and Royal School of Mines. These courses will only be given if a certain number of applications are made a week before February 23. Those intending to join are therefore requested to do so as soon as convenient. All the courses are open to women.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, January 29.—"On the Structure and Development of the Skull in the Mammalia. Part III. Insectivora." By W. K. Parker, F.R.S.

Although this paper is confessedly only a fraction of what is necessary to be done in this polymorphic order, it shows at least how difficult a group it is to handle. For the Insectivora are set in the midst of the other mammalia—low and high. They might be called the biological stepping-stones from the Metatheria to the Eutheria.

One thing can be done, even now, with our present fragmentary knowledge of the structure and development of the insectivorous types—we can assure ourselves that these types are immediately above the Marsupials, that they have the bats (Chiroptera) obliquely above them, that their nearest relations must be sought for amongst extinct Eocene forms, and that, lowly as they are, and arrested and often dwarfed to the uttermost (so that nature could not safely go further in that direction), they are rich in prophetic characters that have come to perfection in larger and nobler types.

I think it will not be denied that in the ascent of the types the Chiroptera are above the Insectivora, and, as it were, a sort of special "new leader" from that stock, and that the Insectivora are more or less transformed modifications of the marsupial type. I suspect that the existing Insectivora just yield the zoologist one of his groups of types classed together because he knows not what else to do with them; they are not a proper, clear, special branch or "leader" of the mammalian life-tree. They form one group under one designation, just as the *poor* of this metropolis form a group; their special mark is simply lowliness; they differ *inter se* almost as much as the whole remainder above them differ. The higher forms, however, because of their elevation, can afford to be sub-divided again into order after order. If we could descend and see the transforming and newly transformed Placentalia of the Eocene epoch, then the morphologist and the zoologist would find common ground; the taxonomy of the latter, however, would be as useless as the titles and distinctions of modern society to some undeveloped race of savage men.

The best type of Insectivore for general comparison is the

[1] The wonderful results obtained by Mink and Müller in their researches on the "Microgonidia of Lichens" show that *high powers alone* do not suffice for scientific investigation. Mr. Crombie has rightly rejected their views.

[2] Johow's could hardly have reached England before the composition of Mr. Crombie's paper. Mattirolo's dates from 1881.

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