Nuclei and Protoplasm. In the laticiferous tubes of all three systems the nuclei are particularly large and distinct. They are readily distinguishable even in unstained sections. Staining with hæmatoxylin or with methyl-green brings them out very clearly. They are large and granular, and closely resemble those of the surrounding cells. They frequently contain very distinct nucleoli.

When a tube narrows considerably and then ends blindly a nucleus is frequently found just below the point where the narrowing takes place. Where the latex has contracted from the walls of the tubes, the protoplasmic layer may be seen, giving a sharp, definite outline to the contracted contents. It is much more definite than is the case in *Manihot Glaziovii*.

Possibly the abundance of the protoplasm and the size of the nuclei may be correlated with the independent growth of the tubes, above referred to. In some cases several nuclei were found very close together in a tube, but no division stages were observed.

The latex is coarsely granular in mature tubes, much more finely granular in the younger parts. It is clearer in the tubes at a node than in those in an internode, hence sections near a node are most suitable for the study of the nuclei.

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'SPOROPHORE' AND 'SPOROPHYTE.'—Into the English edition of Goebel's Outlines of Comparative Morphology and Classification of Plants I imported the word 'sporophyte' with the concurrent 'oophyte' as equivalents for 'asexual generation' and 'sexual generation' respectively in Vascular Cryptogams. 'Sporophore' and 'oophore,' which were used by Vines in the second English edition of Sachs's Text-book, as terms for these generations, are quoted in Goebel's Outlines, but preference is given to 'sporophyte' and 'oophyte.' The necessity for this modification in the terminology has been questioned by several critics in reviews of the edition of Goebel's work, and rightly too upon the evidence, for no explanation of the change was offered. But the innovation was made only after full consideration, and in view of the use of the term 'sporophore' with another signification in the English edition of De Bary's Morphology and Biology of the Fungi, Mycetozoa, and Bacteria, which has just been published; and I now take the opportunity of giving an account of the reasons which led to the introduction of the terms in question, terms for

which (at least for one of them—'sporophyte'), with the meaning attached to them in Goebel's Outlines, De Bary is primarily responsible.

The term 'sporophore,' or rather a latinised form, 'sporophorum,' appears to have been first used by Link in the sense in which we now employ 'placenta' in speaking of Phanerogams, but in this sense, like several other terms for the same structure, never came into general use.

In 1839 Berkeley used the term in the form of 'sporophori' for the structures in Fungi, which, as it turned out, Leveillé had shortly before designated 'basidia,' by which term they are now usually known, distinguishing in this way structures in which spores are exogenetic, from 'sporidia,' structures producing endogenetic spores, and which we now usually speak of as 'asci.' His terminology is consistently followed out in the works of the veteran English Mycologist.

The first employment of 'sporophore' and 'oophore' as the equivalents of 'asexual generation' and 'sexual generation' with which I am acquainted is in the article 'Vegetable Biology,' by Thiselton Dyer, in the new edition of the Encyclopædia Britannica, and there no previous authority is assigned for the use of the terms with this signification. The adaptation of the words was in many ways a very convenient one, for some such expressive terms were wanted, and in oral teaching in Britain they have been widely adopted, although it is only within the last few years that they have crept into teaching-books. As preceding uses of 'sporophore' had not become general, there was no real objection to Thiselton Dyer's terminology, and I should probably not have suggested any alteration but for a difficulty which cropped up in the preparation of the English edition of De Bary's Comparative Morphology and Biology of Fungi, Mycetozoa, and Bacteria.

The difficulty was the following. It was necessary to find an English equivalent for the German 'Fruchtträger,' as used by De Bary in his book in the sense of any structure having spores. 'Carpophore,' the literal rendering, and other compounds of *καρπός*, as well as 'fructification' and 'fruit,' were impossible because they are reserved properly for structures which are the product of the sexual act, and in that way do not cover the ground included in 'Fruchtträger,' and moreover 'fructification' in this proper sense is used in the volume. The general term 'receptacle,' which has been elsewhere employed to translate 'Fruchtträger,' has already so many special meanings attached to it, that it would have been misleading and unwise to make use of it.

After much consideration and consultation with friends, I could find no better solution of the difficulty than to extend the signification of 'sporophore,' as used by Berkeley, beyond the special structures to which he restricted it and to include under it all structures which bear spores of any kind, thus making it the equivalent of 'Fruchtträger.' With this meaning 'sporophore' is consistently applied in De Bary's book, and with satisfactory results so far as my own judgment serves me; I have not yet seen a critical review. Justification of this employment of the word, notwithstanding the other signification given to it by Thiselton Dyer, is to be found in the fact that my interpretation is merely an extension of an older meaning than that given it by Thiselton Dyer, and that in his sense the word has not yet come into general written use.

I may also note that Sprengel had already used the adjectival form 'sporophori' in speaking of the asci of lichens as 'asci sporophori,' so that the term has been in this way applied to structures amongst Fungi which produce spores endogenetically as well as exogenetically, although it was to the latter only that Berkeley restricted it.

Having thus assumed 'sporophore' as the equivalent of 'Fruchtträger,' it was necessary to find a word to express 'asexual generation.' Probably had it been necessary to coin a new word, I should have hesitated in making the modification indicated, but a word ready to hand existed in 'sporophyte,' which readers of De Bary's book on Fungi will find explained there. In the interesting introduction in that book to the second part of the division upon Fungi, 'spore,' 'sporocarp,' 'sporophyte,' are used as terms for three stages in complexity and relative independence of the product of the sexual act; 'spore,' describing the condition in *Spirogyra*, *Mucor*, etc.; 'sporocarp,' fitting the phenomena in the higher Thallophytes and Muscineæ; whilst in Vascular Cryptogams and higher forms we come to the 'sporophyte.' I had merely to add the corresponding 'oophyte.'

Objections to 'sporophyte' in the sense of 'asexual generation' may of course be urged: its use for instance by some authors for the whole group of Cryptogams as distinct from Spermaphytes, the Phanerogams. But I do not require to discuss this further question here, as I only adopted a term already in use for the thing designated. At the same time, to this specific objection I would answer that I do not recognise the necessity for changing terminology merely because a term in use happens to be less expressive of an actual fact than could

be devised, and that the older terms Cryptogam and Phanerogam are in my view quite adequate, and intrinsically are no more objectionable than 'Sporophyta' and 'Spermaphyta,' one of which certainly implies erroneous doctrine.

For similar reasons I need not refer to the many other terms which have been proposed by authors as more satisfactory than compounds with 'sporo' and 'oo' for 'asexual generation' and 'sexual generation.' In a completely reformed terminology more literally expressive words might doubtless be secured. I am concerned here only in explaining the grounds upon which a departure was made from the terminology 'sporophore' and 'oophore' in Thiselton Dyer's sense which appeared likely to come rapidly into general use in Britain.

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