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## Wissenschaftliche Originalmittheilungen.\*)

So-called „Assimilation“.

By

Professor **Charles R. Barnes**,

The University of Chicago.

In the past few years plant physiologists have been gradually awakening to the inaptness of the use of the term assimilation for designating the manufacture of carbohydrate foods. The authority of Sachs's great name for such application of the word has maintained it in its place for many years. Attention has been recently attracted to this misuse by the publication of Pfeffer's masterly treatise on plant physiology, in which he uses as a heading<sup>1)</sup> the phrase „photo-

\*) Für den Inhalt der Originalartikel sind die Herren Verfasser allein verantwortlich. Red.

<sup>1)</sup> Pfeffer, Pflanzenphysiol. I. 1897. p. 284.

synthetische Assimilation“ to designate what he had previously<sup>1)</sup> spoken of as assimilation. In reviewing Pfeffer's work Hansen<sup>2)</sup> calls attention to Pfeffer's use of the word assimilation. Hansen is impressed with the necessity of a specific word (eindeutiges Wort) for the process of manufacture of carbohydrates and proposes the term photosynthesis.

In this proposition, however, he has long been anticipated. Without any pretense at historical discussion, it may be here pointed out that Weisner long since indicated the lack of a suitable word. Referring to the process of carbohydrate-making, he says: „Es scheint aber der im Texte gegebenen Begriffsumgrenzung an einem Worte zu fehlen für jenen wichtigen Process, den man bisher als Assimilation bezeichnete“<sup>3)</sup>.

In a paper read before the Botanical Section of the American Association for the Advancement of Science at its Madison meeting in August 1893<sup>4)</sup>, I proposed to supply this want by the word photosyntax. This term I have since employed in lecturing and writing and it has come into use by a number of students in this country. At the same time Professor Mac Millan of the University of Minnesota expressed his preference for the term photosynthesis, which in the same paper I indicated as an available word, but rejected as etymologically less accurate. The latter term has been taken up by Professor Mac Dougal of the University of Minnesota and used by him, both in his translation of Oels's Pflanzenphysiologische Versuche and also in his Experimental Plant Physiology.

The propounding of the same term by Hansen is of value only as a tardy recognition of the fact that the term assimilation can no longer be correctly used. It is not important whether photosyntax or photosynthesis, or some other word, finally comes into general use to describe the manufacture of carbohydrates by green tissues under the action of light. It is high time, however, that we drop as promptly as possible, the use of assimilation for this or any similar process. The reasons for this I have set forth at some length in the paper „On the food of green plants“ previously referred to.

I may here take occasion to criticize Pfeffer's defence of the term assimilation. He says, „Wenn „Assimilation“ gelegentlich speciell auf die Formation von Körperbausteinen, also auf den organisatorischen Stoffwechsel eingeschränkt wurde, so dürfte es doch praktischer sein, dem üblichen Gebrauche zu folgen und unter „Assimilation“ auch diejenigen physiologischen Prozesse zusammenzufassen, die im Organismus zur Herstellung von plastischen Stoffen dienen. In solchem Sinne wird z. B. die Production von Kohlenhydraten im Chlorophyllapparate als

<sup>1)</sup> Op. cit. p. 271.

<sup>2)</sup> Botanische Zeitung. LVI. Abth. II. 1898. p. 22.

<sup>3)</sup> Elemente der Wissensch. Bot. I. p. 332.

<sup>4)</sup> Botanical Gazette. XVIII. 1893. p. 409.

Assimilation angesprochen, zu der mit gleichem Rechte die Synthese der Eiweissstoffe, oder die Formation der verschiedenen Bau- und Nährstoffe in dem Ameisensäure oder Essigsäure ernährten Pilze zu rechnen sind<sup>1)</sup>. Against this I may urge the following:

First: The special meaning of assimilation to which he says the word is „occasionally limited“ is in reality the more general one, except among plant physiologists. Botanists have no right to take a term from animal physiology and apply it to a totally different process, because such action leads (as it has for a long time in this case), to dire confusion of ideas. This is the more reprehensible because assimilation, in the sense of the animal physiologist, also occurs in plants and the word is needed to designate that process.

Second: The plea that an error is a „customary“ one affords no ground for continuation. Rather, the more customary it is, the more strenuously should one protest against its perpetuation, and the more careful should physiologists be to see that they eliminate such sources of confusion from their writings.

Third: That the term assimilation is as properly applicable to the manufacture of carbohydrates as the synthesis of proteids is true. The answer to this is that assimilation is not properly applicable to the synthesis of proteids. Indeed, it is evident that we need for this process a specific term, if the phrase just used is not sufficiently short, and some one would do a good service in proposing a brief and expressive word for it. This will leave the term assimilation restricted, not occasionally but continually, to the utilization of foods for the repairing of waste and for the formation of new parts.

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## Beitrag zur Kenntniss der periodischen Wachsthumsercheinungen bei *Hevea brasiliensis* Müll.-Arg.

Von

**J. Huber,**

Pará (Brasilien).

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Man ist von jeher gewohnt, die periodischen Wachsthumsercheinungen der Holzgewächse in Zusammenhang mit den Jahreszeiten zu bringen, und in den Klimaten mit ausgesprochenen Jahreszeiten existirt auch wirklich eine enge Beziehung zwischen diesen beiden Erscheinungen, welche sich besonders da zeigt, wo die während eines Theiles des Jahres auftretende Temperaturerniedrigung oder grosse Trockenheit eine förmliche Unterbrechung der Vegetation herbeiführt. Ein vollkommener Laubfall und ein nach einer mehr oder weniger langen Ruheperiode simultan auf-

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<sup>1)</sup> Op. cit. p. 271.

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