A term selected as a name for the essential aqueous changes brought about in an organism by the cooperation of any of these hydraulic forces should be simple, direct in meaning and preferably homogeneous with respect to the language of its origin. I am suggesting the word *hydrosyntaxis* (or hydrosyntaxy) to signify the sum total of those functions *within the organism* that are immediately operative in bringing about and maintaining the delicate water balance between protoplasm and its external environment.

The Greek word ὕδωρ (water) or ὕδρα (akin to water) signifies not only pure water, but the aqueous bodies of river, lake or ocean water, as well as any of the biological fluids. Therefore, since the aqueous changes between living organisms and their environment and similar changes in simple synthetic models take place with water playing the major and indispensable rôle, the all-inclusive prefix "hydro-" would seem to be justified. The suffix "syntaxis," derived directly from the Greek συνταξις (adjustment, regulation, or arrangement), is perhaps the most fitting term to be used in naming the situation.

Should we select a suffix to mean "transfer," "transportation" or "exchange," the emphasis of the concept might be laid upon the experimental means of *measuring* an aspect of the more fundamental function of the organism. Similarly, terms signifying such phenomena as sorption, secretion, hydrophilia, etc., would present merely a part of the picture of hydraulic activity within the organism. The suffix "syntaxis" is therefore suggested as being of the broadest significance for the group of complex phenomena involved.

Regarding the prefix, several alternate terms have suggested themselves, but each has a specific fault that makes its recommendation questionable. Thus, "humoro-," although from a good Latin word, seems cumbersome, antiquated and not without a degree of ambiguity. "Hemo-" and "sero-" have a manifest narrowness in connotation. I was tempted to recommend "plasmo-" as a fitting prefix, but was reminded that it, like "sero-," has also come to connote the blood-plasma specifically, in medico-chemical parlance. The terms "osmosyntaxis" (unless this be interpreted to signify something to do with the sense of smell, from the Greek οσμη) or "halosyntaxis" provide a description of a considerable part of an organism's body-fluid regulation, but do not present the entire picture, as would the more general term "hydrosyntaxis," the meaning of which includes osmotic adjustment as well as phenomena such as imbibition, syneresis and others.

Some single, relatively simple term denoting the intra-somatic, cooperative manifestation of these complex water activities should, besides being convenient, serve to keep in the minds of investigators the several components of which the water and salt balance of an organism is the integrated expression.

Further remarks or communications on this subject will be useful.

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ANTECEDENT LIGHTNING PROTECTION

THE most interesting discussion by Dr. Whitehead and Dr. Lloyd[1] concerning the ability of a lightning rod to reduce the danger from lightning by gently discharging the lightning cloud or, what is the same thing, reducing the potential gradient above the lightning rod, has been carried forward on qualitative rather than quantitative lines. This tends somewhat to obscure their essential agreement on principle, for both state that there may be gentle discharge from the point of a lightning rod, although the amount of such discharge is called in question.

It is not surprising that a quantitative discussion of lightning should be avoided, for there are few electrical phenomena so little amenable to quantitative treatment, but an estimate of the order of magnitude of the dimensions involved might somewhat clarify the point at issue.[2, 3]

A vigorous corona discharge from a pointed electrode may represent a flow into the air of 1 milliampere of current; such a discharge would be brilliant at night, and under favorable circumstances could be seen in the daytime. It would require a powerful electric field, many times that required to initiate discharge. A weaker electric field of only twice the corona-forming gradient would result in discharge from the end of a 1 mm diameter wire of a current of the order of 10^{-5} amperes; such a discharge would be visible on a dark night.

In the electric field that accompanies lightning, the released charge would be swept away from the lightning rod, toward the lightning cloud, at a rate that might approximate 1,000 meters per second. The free charge in space above the rod would be between 10^{-8} and 10^{-6} coulombs, depending on the vigor of the discharge. This is enough to distinctly alter the electric field near the tip of the rod, but its effect as one approaches the cloud would be vanishingly small. If the potential difference between cloud and ground is maintained constant, the influence of space-charge issuing from a rod will be to increase the potential gradient at the cloud directly above the rod and to lessen the gradient in the immediate vicinity of the

[1] SCIENCE, December 1, 1933, December 29, 1933, February 23, 1934.

[2] J. S. Townsend, "Electricity in Gases," Oxford Univ. Press.

[3] F. W. Peek, "Dielectric Phenomena in High Voltage Engineering," McGraw-Hill.

tip of the rod, and if any practical effect is noticeable it will presumably be to increase the probability of lightning strokes in the general neighborhood of the lightning rod, while tending to shield the rod itself from receiving the stroke.

But the cloud potential will not remain constant, for electric charge escaping from ground by means of the corona discharge on a lightning rod will travel toward the cloud and will thereby decrease the cloud's potential. It is in this effect that one may look for the advantage of the quiet discharge. What data there are available indicate that a powerful lightning stroke represents a discharge of more than half a coulomb. A point releasing current into the air at the rate of one milliampere would neutralize 10 per cent. of the cloud's charge in about a minute, while a point carrying 10^{-5} amperes would require 100 minutes to release the same charge. Many points would unquestionably be more effective than one point, but too little is known about lightning to determine the area of ground surface in which to count the number of points.

Nor can one predict how rapidly the charge of lightning clouds increases, how rapidly the clouds blow by, nor therefore how much time is available for a lightning rod to discharge a cloud. But under the most favorable circumstances it is not likely that a discharge of 10^{-5} amperes could be of much practical use, even though many points were discharging at this rate. On the other hand, a few points each discharging a milliampere might sometimes be a valuable protection.

So the problem becomes one of observation by those located in regions favored by lightning. Is there a visible discharge during a storm from lightning rods? How vigorous is the discharge, and (if such a measurement is not incompatible with safety) how much current does it represent? Does a discharge take place only from sharp points, or is it also to be seen on dull-pointed rods? Finally, is such a discharge to be obtained only on lightning rods, or is it to be found on weather-cocks, radio antennas, power transmission poles, wet trees and other high, conducting points?

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PLEOSPORA LYCOPERSICI E. AND E. MARCH., A TOMATO PATHOGEN IN THE UNITED STATES

A PLEOSPORA rot of tomatoes has been found causing extensive decay in California stock shipped to the eastern markets during November and December. This disease has been under observation since 1919, and each season it has been found the cause of more or less serious decay in tomato shipments during these two months. Inspections of numerous cars of tomatoes on the receiving markets have shown Pleospora rot to be the cause of losses of 50 to 90 per cent. of the fruit during transit and ripening. In the early stages brown V-shaped to oval, moderately dry lesions about the stem scar are characteristic symptoms of this disease. As the fruits ripen, the lesions become softer and the black perithecia of the causal organism become evident in the center.

So far as the writer has been able to determine, no reference has been made to Pleospora rot of tomatoes in this country. In 1921 E. and E. Marchal[1] found a tomato fruit rot in Belgium, incited by a new fungus, which they described as *P. lycopersici*. A careful check of the measurements of the Pleospora isolated from California tomatoes with the description and illustrations presented by E. and E. Marchal for *P. lycopersici* indicate that the two fungi are identical. The conidial stage *Macrosporium sarcinaeforme* Cav. is also present on California tomatoes.

Single spore cultures have been made and it has been demonstrated that single ascospores as well as single conidiospores will give rise to cultures bearing both the *Pleospora* and *Macrosporium* stages. The average measurements for the Pleospora obtained from California tomatoes are as follows: perithecia 325–550 μ diam., asci 28.2 × 167.0 μ, ascospores 15.2 × 34.4 μ, conidia 13.5 × 26.0 μ.

A complete description of symptoms, together with temperature studies and other economic aspects of this disease, will appear in a future article.

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DIPLONEURA NITIDULA MEIGEN

DURING the summer months and as late as last October, this species of Diptera, family Phoridae, was observed in New York City. Rev. Joseph Assmuth, S.J., head of the biology department at Fordham University, observed these individuals in great numbers near the base of a sycamore tree on the campus. Father Schmitz, S.J., after receiving the specimens reports that this is the first authentic observation of this species in North America. The most striking point of interest was their presence in such large numbers. According to the present literature Schmitz observed a similar phenomenon of a species of Phalacrotophora. Fordham University now has several specimens on exhibition in their entomological collection.

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[1] Él. et Ém. Marchal, "Contribution à l'étude des champignons fruticoles de Belgique," *Bulletin Société Royal de Botanique de Belgique*, 54: 109–139, 1921.