

terial activities which in turn cause the plants to get more food and grow larger on less moisture." In the *Journal of Industrial and Engineering Chemistry* for March, 1922, Dr. Noyes reported experiments where "fertilization has decreased the water requirements of plants over one half, when expressed as the amount of water necessary to produce one unit weight of plant." "It appears that if the soil solution is weak, the plant transpires more water in its attempt to make a normal growth."

The observations of Dr. Noyes seem to confirm my application of Bechhold's "capillary phenomenon" in agriculture (*SCIENCE*, July 22, 1921), because increased evaporation at the surface of the ground in the immediate neighborhood of the plant would mean a richer soil solution within reach of the plant roots; so that even if some water is lost, the plant can get its food requirements with less water. The uncultivated soil near the plant may even be robbed of its food and moisture by sidewise diffusion streams. As W. Kraus showed, the movement of salts in the Bechhold "phenomenon" is dependent upon evaporation at the exposed surfaces (*Kolloid Zeitschrift*, 28, 161, 1921).

Another important factor is the *rate* at which the soil water reaches the plant roots. This must at least equal the speed at which moisture is evaporated by the leaf system, otherwise the *wilting coefficient* is reached and the plant droops. In this connection Sir E. J. Russell, director of the Rothamsted Experimental Station, pointed out that the availability of nutrients should properly be measured by the *rate* at which they reach the roots which absorb them. (*J. Agri. Sci.*, 1, 327).

According to the Bechhold phenomenon, cultivation of the soil immediately above the roots (which is where cultivation takes place) increases evaporation there and the accelerated *upward* and *sidewise* diffusion streams carry the essential water and food with sufficient rapidity to favor plant growth. Russell says (*Trans. Faraday Soc.*, February, 1922) that a crop of wheat weighing with its straw about four tons per acre, transpires during its lifetime about 1,000 tons of water per acre, the actual strength of the soil solu-

tion varying from 0.0001 to 0.006 per cent. according to treatment.

Dry weather usually comes when the plant's leaves are well developed; and in any event it means a period of rapid evaporation from the leaves. Especially *then* has cultivation been found a life saver, and often an actual aid to growth.

The remarks of Dr. Cyril Hopkins (quoted by Dr. Frierson to support his view) that the soil is "stirred after each rain to prevent evaporation, and thus store up sufficient moisture in the soil to give the crop a good start," do not militate against my view; for Dr. Noyes' experiments show that cultivation, by allowing the plant to grow with less moisture early in the season, enables it to enter the drought period "with an accumulative reserve of soil moisture." This is a most important conclusion. It seems to me, however, that the Bechhold phenomenon of salt concentration or movement also explains why a plant may thrive on less water; for this lesser amount of water, enriched by diffusion, has the essential plant foods.

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#### REPOSITORIES FOR SCIENTIFIC PUBLICATIONS

TO THE EDITOR OF *SCIENCE*: Recent discussion in *SCIENCE* as well as in other places is indicative of the increasing interest in efforts to extend limited funds so as to cover rapidly expanding scientific writings or to curtail such writings so as to bring them within the limits of the funds.

This interest is considerably augmented by the realization of workers in certain lines that there is also a problem of storage space for multitudinous papers and a kindred problem of finding time and energy for reading such as come to hand.

In the course of recent discussions with representatives of the University of California Press and the University of California committee on research I have been impressed with the need for adoption of a general policy with regard to certain features (at least) of scientific publications.

It is my understanding that the University

of California officials are about ready to adopt for their publication material of all departments the settled policy of curtailing or excluding generally explanatory discussion which is plainly redundant or needlessly explicit, and of curtailing or excluding tabular, statistical or other exhibitiv matter which is likely to receive little or no attention from most readers. But, in order that such exhibitiv material shall not be lost to permanent record (where its value may be far superior to mere textual discussion) it is expected that limited numbers of copies of such matter will be mimeographed or otherwise duplicated and placed in certain repositories designated because of their accessibility to those persons most likely to need such records.

Such a plan seems to offer the best possibilities for meeting the adverse conditions mentioned, but since it is probable that in many or most cases the individuals or organizations concerned will be expected to arrange matter for deposit there is danger of much confusion in the process of accumulation at points of deposit.

Possibly the National Research Council can give early assistance in the matter by obtaining the consent of available institutions to act as repositories and also by classifying them according to local interests if that should seem desirable. For example, an institution in Indiana would not be very favorable as a place of deposit for most marine material.

Provision should also be made for putting deposited documents in fairly uniform packages. In the case of statistical tables such as my own the ordinary typewriter sheets (8 x 11 inches) would probably be most satisfactory. It would then be an easy matter for the institution of deposit to tie them up or put them in clip binders for convenient and economical storage.

If definite plans can be made for some such dispersal they will surely greatly expedite the issuance of papers using large volumes of quantitative and statistical records. Such papers may then get into print and into use while still comparatively fresh. Furthermore the worker in such lines will not have so much reason to be discouraged by long delay in pub-

lication, following the monotony (and sometimes dreary drudgery) of making, accumulating and interpreting the records.

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#### ALFRED GOLDSBOROUGH MAYOR

TO THE EDITOR OF SCIENCE: When I saw the name "Alfred Goldsborough Mayor" at the head of Dr. Woodward's most interesting and appreciative notice of his late associate I suspected a typographical error, but when I saw the same name "Mayor" throughout the article and found it the same in "Who's Who" and in the list of members of the National Academy of Sciences, I realized that a change, which had escaped my notice, in the spelling of this well-known name had been made by the son of my old friend, Professor Alfred M. Mayer, the charming and accomplished professor of physics who for so many years was the head of that department at the Stevens Institute of Technology.

One would like to know the reason for this, which may have been due to the not infrequent pronunciation of the original spelling as if it were "Myer," but this seems an insufficient excuse for abandoning a form so long and so well known in the world of science and art.

Besides the distinguished father of the late biologist, his uncle, Frank Blackwell Mayer, was an eminent artist who studied in Paris, exhibited in the French salon, won a prize for his paintings at the Centennial exhibition in Philadelphia and made special studies of Indian types in the west.

His father's uncle, Brantz Mayer, was a distinguished historian and archeologist, the author of numerous volumes and the founder of the Maryland Historical Society.

Alfred M. Mayer also studied in Paris and always exhibited a fondness for and even a prejudice in favor of French men, methods and books, and I had always assumed that the family was of French origin, a hypothesis which received some confirmation in the fact that one "Constant Mayer," a French artist, came to this country about the middle of the