Letters

Founding of Association of American Geologists

The recent article in *Science* [**129**, 1106 (1959)] entitled "Geology, geologists, and the AAAS" reminds me of the part played by the Franklin Institute in the founding of the Association of American Geologists. The organization meeting of that association was held in the hall of the Franklin Institute 2, 3, and 4 April 1840. At the request of the association an abstract of the proceedings of the meeting was prepared by its secretary, Lewis C. Beck, "for publication in the American Journal of Science, and in the Journal of the Franklin Institute." This abstract appeared in the *Journal of The Franklin Institute* in April 1840 (vol. 29, pp. 219–220) and in the *American Journal of Science* in July 1840 (vol. 39, pp. 189–191) and was also published by the association in 1843 (*Reports of the First, Second, and Third Meetings of the Association of American Geologists and Naturalists,* pages 9–11). The text is the same in all three publications, but Beck's name appears at the end of the abstract only in the *Journal of The Franklin Institute.*

The archives of the Franklin Institute contain a holographic communication, signed by Lewis C. Beck, secretary, and containing a resolution of thanks to the institute for the use of its rooms by the Association of American Geologists "during the present meeting"; it is endorsed on its back "read April 15/40." The manuscript minutes of the stated meeting of the board of managers of the Franklin Institute on 15 April 1840 record the receipt of this communication and contain its complete text. Of the 18 founders of the association, seven were members of the Franklin Institute.

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Is There a Vapor Gap Around Plant Roots?

A "narrow vapor gap" around plant roots has been invoked by J. Bonner to explain the movement of water into roots without an accompanying transport of salt [*Science* **129**, 447 (1959)]. While there is a distinct need for improved theory to explain observed effects of soil salinity on plant growth, the following appear to be formidable obstacles to the vapor gap hypothesis.

The osmotic effect of salinity on plant growth in water culture is comparable to that in soil culture (*1*), and a vapor gap explanation for the osmotic gradient is, of course, out of the question in water cultures. Furthermore, the effects of salinity on plant growth are apparent at high levels of soil moisture and at low rates of water absorption from the soil. These conditions, as a matter of fact, are induced by soil salinity which reduces the rate of water uptake from soil and makes it impossible for the plant to deplete the soil moisture to values that would be obtained under nonsaline conditions. In other words, the factors that would be necessary for the development of a vapor gap, rapid water uptake and low soil-moisture content, do not usually develop in saline soils.

At low water contents, large gradients may be set up in the vicinity of the root. However, the existing data (*2*), including values estimated by Philip (*3*), indicate that, even at the dry end of the plant-growth moisture range, water movement in the liquid phase is still more important than that in the vapor phase. Under isothermal conditions, the soil-water diffusivity for vapor movement, expressed in terms of the gradient of the water content of the soil, is calculated to be of the order of 10^{-6} cm^2/sec and probably seldom exceeds 10^{-5}