been made to larger flasks and have shown a cell increase similar to that in Carrel flasks.

This method of adaptation of cell growth to a glass surface has been successfully repeated on additional clot cultures of the same embryonic tissue as well as on normal human adult tissue, previously cultured for 2½ yr in clots. Studies are in progress on cell differentiation, histology, nutrition, and chemical analysis of the cells.

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Electron Microscope Observations of the Formation of Aluminum Phosphate Crystals with Kaolinite as the Source of Aluminum

In connection with phosphate fixation by soil minerals, it has been shown that phosphate treatment diminishes the kaolinite x-ray diffraction pattern (*1*) and that various aluminum phosphates are the end-products of phosphate-induced kaolinite decomposition (*2*).

By means of the electron microscope, we have observed the progressive formation of aluminum phosphate crystals concurrent with the decomposition of crystals of kaolinite suspended in various phosphate solutions (*3*). In the potassium phosphate system, x-ray diffraction analysis revealed the presence of a compound identical to one shown by analysis (*4*) to be $KOH(Al)_2(PO_4)_2 \cdot 1.7H_2O$, which is similar to minyulite. In the sodium system, x-ray diffraction analysis revealed the presence of a compound identical to product 12 of Haseman *et al.* (*2*) shown by analysis to be $H_{1.7}Na_{1.2}Al_{2.0}Fe_{0.004}(PO_4)_3 \cdot 2.7H_2O$, which is similar to taranakite.

The kaolinite employed was the material passing a 2-mm sieve from our standard W1176 obtained from the McNamee Mine, near Langley, S. C. A 0.1-g sample was treated with about 15 ml of 1.0*M* KH_2PO_4 (*p*H 4.3) and another with 1.0*M* NaH_2PO_4 (*p*H 4.3). In order to hasten the reactions, the samples were placed on a steam hot plate at a temperature of about 90°C.

At time intervals indicated in Figs. 1 and 2 (and oftener), each sample was washed five times with distilled water by the centrifuge method, and then a portion of the sample was removed for electron microscope examination. The remainder of the sample was treated with a fresh phosphate solution of the same composition as before. When electron microscope observations indicated that all of the original kaolinite had been transformed into the new crystalline (phosphate) phase, the samples were again washed five times with distilled water and once with acetone, dried, and x-rayed by the powder method.

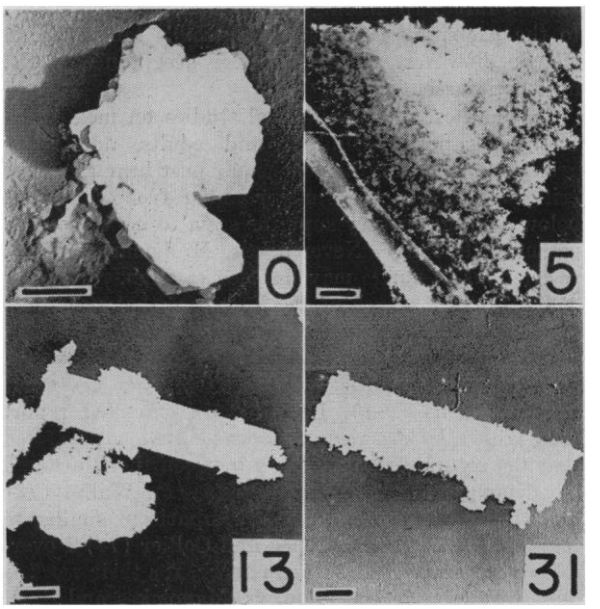

Fig. 1. Electron micrographs of kaolinite treated at 90°C with 1.0*M* KH_2PO_4 at *p*H 4.3 for 0, 5, 13, and 31 days at the end of which minyulite-like crystals had formed as determined by x-ray diffraction (*7*). Line indicates 1μ.

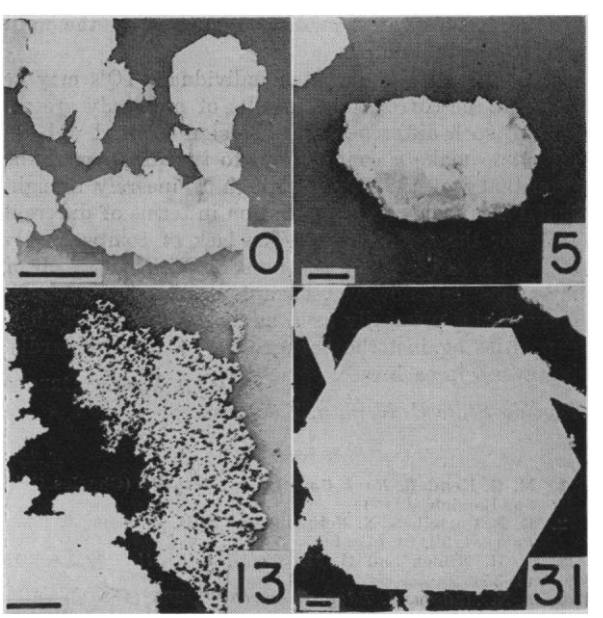

Fig. 2. Electron micrographs of kaolinite treated at 90°C with 1.0*M* NaH_2PO_4 at *p*H 4.3 for 0, 5, 13, and 31 days at the end of which taranakite-like crystals had formed as determined by x-ray diffraction (*7*). Line indicates 1μ.

By use of the electron microscope, we were able to observe the gradual dissolution of the original kaolinite crystals (left at first as a fleecy residue) concurrent with the progressive formation of the new phosphate phase (Figs. 1 and 2). One might think that the large hexagonal crystal in Fig. 2, 31 days, is

kaolinite; however, x-ray diffraction analysis of both systems showed that the new phosphate phase was the only one present, the kaolinite having been completely dissolved. It can be seen then that the formation of aluminum phosphates at the expense of kaolinite is a solution-precipitation phenomenon involving dissociation of aluminum from the kaolinite surface and destruction of the kaolinite crystal, which is in accord with the aluminum-dissociation and solubility-product principles advanced (*5, 6*) to explain phosphate fixation by soil minerals. Further studies are being conducted with kaolinite and other minerals to find the effects of the phosphate solution concentration, *p*H, and temperature.

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References and Notes

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2. J. F. Haseman, E. H. Brown, and C. D. Whitt, *Soil Sci.* **70**, 257 (1950).
3. This work was supported in part by the Research Committee through a grant from the Wisconsin Alumni Research Foundation.
4. E. D. Glover, *master's thesis,* Univ. of Wisconsin (1952).
5. C. V. Cole and M. L. Jackson, *Soil Sci. Soc. Amer. Proc.* **15**, 84 (1951).
6. P. F. Low and C. A. Black, *ibid.* **12**, 180 (1948).
7. Photographs were presented at Soils Department seminar, University of Wisconsin, Madison, 24 Oct. 1952.

12 July 1954.

Association Affairs

Programs of the Berkeley Meeting, 26–31 December 1954

Advance indications last spring that this year's 121st meeting of the Association at the University of California at Berkeley would be the largest diversified scientific meeting ever held on the Pacific Coast are being realized. In addition to the programs of the Association and its 18 sections, 59 societies and other scientific organizations have scheduled more than 300 sessions; another 30 societies will cosponsor appropriate symposiums. It will also be one of the largest meetings in the long history of the AAAS, now in its 107th year.

The size of the attendance, however, is only one aspect of a successful meeting. It assures that one will find friends and coworkers in one's specialty also attending the meeting, but the physical arrangements, the quality of the programs, the opportunities to meet scientific leaders from other parts of the world, the impact of new concepts, and the general stimulation of informal discussions are all factors of importance. In these respects, too, the Berkeley meeting should be particularly satisfactory.

The campus of the University of California, which is remarkably compact for so large an institution, has an adequate number of well-equipped session rooms. With the exception of the National Geographic Society's annual lecture and accompanying film, to be held in the Berkeley High School auditorium, and the sessions of Section P at the Hotel Claremont, all sessions for papers, symposiums, and evening addresses will be held on the campus. Center of the meeting is the large Gymnasium for Men, which will house the one AAAS Registration-Information Center, the Visible Directory of Registrants, the AAAS Science Theatre, and the AAAS Annual Exposition of Science and Industry—with 114 booths. Directly across the street, the University of California Alumni Association has generously made available its new luxuriously furnished Lounge for all who attend the meeting. A variety of university laboratories and museums will be of interest to scientists in all principal fields.

An unusual variety of housing accommodations are available, ranging from the university dormitories—two persons to a room at the nominal charge of $2 each the first night, $1 per night thereafter—and International House, to hotels and motels. Although single rooms near the campus are now scarce, there are ample accommodations in Berkeley, at moderate rates, if colleagues will share a twin-bedded room. Four university cafeterias grouped in one central location will be particularly convenient for luncheons and dinners. The California Academy of Sciences in Golden Gate Park, San Francisco, has issued an invitation to all visitors to tour the Science Museum with its science library and research departments, the Steinhart Aquarium, and its new Morrison Planetarium (admission free to all registrants).

The 121st meeting will have a decidedly international aspect resulting from the concurrence of the Third Berkeley Symposium on Mathematical Statistics and Probability, a 4-day International Conference on Animal Venoms, and the program of the International Union for the Study of Social Insects. The American Physical Society has arranged for the presence of Fritz Zernike, 1953 Nobel prize winner from the Netherlands. Besides the scientists from Europe and the Eastern Hemisphere, a heavy representation from Hawaii, the Philippines, and other Pacific areas is anticipated. In addition to the annual Academy Conference, made up of delegates of the 42 academies of science affiliated with the Association, there will be the recurrent Conference on Scientific Editorial Problems and the Conference on Scientific Manpower. The following data on participating organizations and programs indicate the scope and quality of the meeting.

AAAS as a Whole

General symposium, *Science and Society*: I. "Natural resources: power, metals, food," arranged by Louis B. Slichter; II. "Population problems," by Curt Stern; III, "Impact of science on society," by Roger R. Revelle, 27–29 Dec.

AAAS presidential address by E. U. Condon, and reception, 28 Dec.

AAAS Council meetings, 27, 30 Dec.

Biologists' smoker (for all registrants), 30 Dec.

(Note: For brevity, except for certain joint programs, official cosponsorships have been omitted in the following tabulation.)