Comments and Communication

Do Amino Acids Fluoresce on Papergrams?

Before amino acid papergrams are treated with ninhydrin, it is customary to drive off the residual solvents by heating. It has been observed that the amino acid spots fluoresce under ultraviolet light at this stage, and fluorescence is frequently used when it is desired to locate the amino acids without reacting them with ninhydrin. This has led to an assumption which appears unwarranted, that it is the dry amino acids themselves that fluoresce.

In experiments with glycine and Whatman No. 1 filter paper, we have found that after heating, unchanged glycine can be extracted by washing with water, but the fluorescence remains behind on the paper. This, incidentally, leads to errors if an area located by fluorescence is water-extracted for subsequent evaluation by ultraviolet absorption. It is easy to demonstrate that the paper is essential for the development of fluorescence. We have air-dried spots from solutions of 21 common amino acids on filter paper (Whatman Nos. 1 and 50), and on glass plates. None of the dry spots fluoresced under ultraviolet light in the 3650-A region. After a few minutes' heating at 105° C, all the paper spots fluoresced. The spots on hardened paper fluoresced more brilliantly at first, but 3 hr of additional heating obliterated this difference.

None of the amino acid spots on glass fluoresced, even after 24 hr of continuous heating. A typical example may be seen in the figures. They show spots of the same amino acid (cystine), heated under identical conditions, on Whatman No. 50 paper and on glass. Photographed under tungsten light (Fig. 1), the paper spot is invisible and the glass spot is faintly outlined by a border of dried crystals. Photographed in the dark under ultraviolet light with process pan film and a Wratten A red filter (Fig. 2), the paper spot glows with fluorescence and the corresponding spot on glass is invisible because it does not fluoresce.

The production of fluorescence may be due to a reaction between the amino acid and the cellulose, similar to the nonenzymatic browning reaction. Most amino acid spots become visibly brown after prolonged heating. For example, 3 g glycine in solution, pulped with 60 sq in. Whatman No. 1 paper in a Waring Blendor and evaporated to dryness, showed brown discoloration and intense fluorescence after 6-hr heating. Neither browning nor fluorescence occurred under identical conditions with glycine or filter paper alone. It seems obvious that the molecular structure of the amino acid is not a prime factor in producing such fluorescence. All the amino acids produce similar results, the *sine qua non* being the filter paper. Heating speeds up the reaction but is not

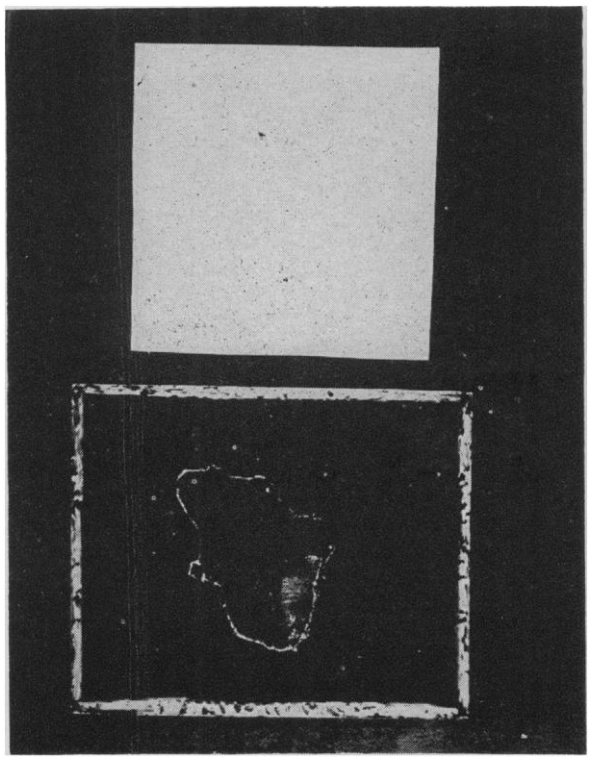

FIG. 1. Appearance of heated amino acid spot on filter paper and glass plate under tungsten light.

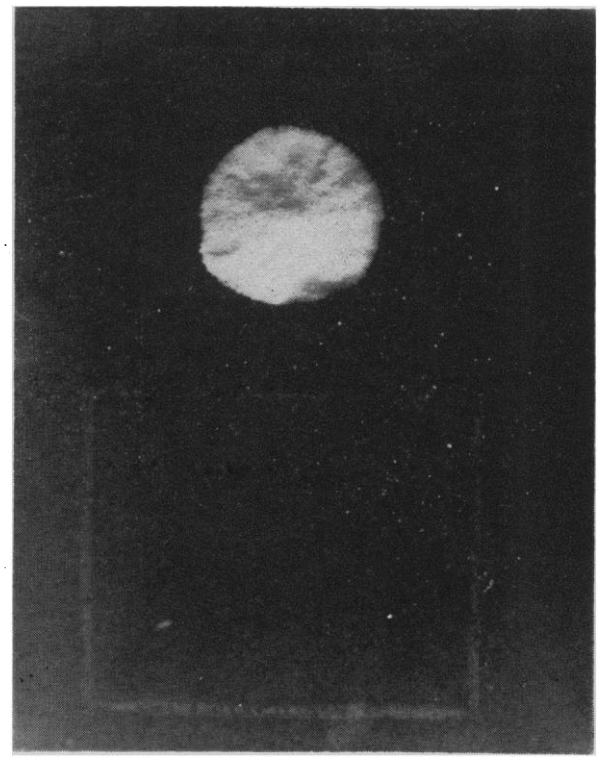

FIG. 2. Heated amino acid spot on filter paper and glass plate under ultraviolet light in the 3650-A region.

necessary; fluorescence develops slowly at room temperature. Drying from solution does seem to be necessary for the close contact required.

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The Coxsackie Group of Viruses

It has become desirable to name those viruses that are pathogenic for suckling mice and hamsters, and that have recently been associated with "poliomyelitis" (Dalldorf, G. and Sickles, G. M. *Science*, 1948, **108**, 61; Dalldorf, G. *et al. J. exp. Med.*, 1949, **89**, 567; Melnick, J. L., Shaw, E. W., and Curnen, E. C. *Proc. Soc. exp. Biol. Med.*, 1949, **71**, 344). I have felt that the disease should not be named until something is known of the anatomic lesions in man and a good deal more is learned of the range of symptoms and the relationship, if any, to classical poliomyelitis. On the other hand, a provisional designation is needed and it is suggested that the agent be called "Coxsackie virus," since the first recognized human cases were residents of that New York village. Since a number of viruses may be involved, the term "Coxsackie group of viruses" seems especially suitable. This provisional nomenclature has the support of those workers known to us to have experience with these agents, namely, J. L. Melnick and E. C. Curnen, of the Yale School of Medicine, and G. E. Quinby, R. S. Paffenbarger, and Beatrice Howitt, of the Communicable Disease Center, U. S. Public Health Service.

The term may properly be applied to viruses having the unusual host range described in published studies and the faculty of inducing severe, destructive lesions of the striated muscles, with or without encephalomalacia in immature mice and hamsters.

It is hoped that strain identification will be made only after reference to those strains that have now been studied.

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Basic Issues in the Controversy on Zoological Nomenclature

A very important and basic controversy is now going on in zoological nomenclature. So far only scattered comments have appeared in public and these few statements present conflicting views. It is apparent to the members of this discussion group[1] that the basic issues have not been sufficiently emphasized.

At Paris in July 1948, the International Commission on Zoological Nomenclature, which there consisted of four regular commissioners and eight or nine alternates appointed for the occasion, adopted a far-reaching program of reform, a program prepared at great length by the secretary. This program included (1) authorization for a rewriting of the code around a set of stated principles; (2) action on a large number of individual amendments, none of which had previously been voted on by the commission; (3) entrusting to "jurists" the preparation of the text of the new code in "watertight legal language"; and (4) a complete reorganization of the commission, its size, its method of selecting members, and its bylaws. Most of this was without advance notice to zoologists or to the commission, and neither the commissioners nor the alternates at Paris had opportunity to study the voluminous agenda in advance of the meeting.

The following facts stand out as the basic issues: (1) the most momentous actions of a half-century in zoological nomenclature were taken at Paris without preliminary announcement, without the usual opportunities for consideration by zoologists in general, and without prior study and approval by the regular commissioners; (2) in many cases approval was given only "in principle," with no provision for review of the principles and with the actual wording left to a committee of jurists; (3) not only was no provision made for review of these principles, but no right was reserved for the regular commission, the international congress, or zoologists to accept or reject the final wording of the proposed revision or any of its parts before promulgation.

It is clear that the program which produced these issues was created and fostered by the secretary of the commission, who no doubt believed that his actions were desirable and necessary to improve the nomenclatural situation. Nevertheless, shorn of all obfuscations regarding "mandates from the congress," dangers of delay, and similar assertions, the means taken to effect the ends are contrary to the principles and practices on which international cooperation in nomenclature was established and by which it has functioned for nearly half a century.

Such actions strike at fundamentals. If they are allowed to stand, international cooperation in nomenclature will be a farce, the confidence upon which support of the commission has been based will be lost, and the accomplishments of years in the field of zoological nomenclature will be jeopardized.

If confidence is to be maintained and international cooperation made secure, any plan for revision of the code must have widespread approval. Zoologists must be permitted to see any such proposals and express their reactions, the full commission must study all proposals, as well as the comments of zoologists, and pass judgment on them, and, if it still seems desirable to maintain the formality, the following International Congress of Zoology must formally approve the final draft.

STEERING COMMITTEE,
NOMENCLATURE DISCUSSION GROUP

Washington, D. C.

[1] The Nomenclature Discussion Group consists of 71 taxonomists of the Smithsonian Institution, the U. S. National Museum, the Bureau of Entomology of the U. S. Department of Agriculture, the Paleontology Branch of the U. S. Geological Survey, the Fish and Wildlife Service of the U. S. Department of the Interior, and the U. S. Public Health Service. This statement is signed by the members of the Steering Committee, as follows: R. E. Blackwelder, F. A. Chace, E. A. Chapin, D. H. Dunkle, R. Kellogg, J. B. Knight, C. F. W. Muesebeck, P. W. Oman, H. A. Rehder, C. W. Sabrosky, A. Stone, and A. Wetmore.