to be made under conditions prescribed by a committee consisting of the president of the society, chairman; Dr. Cook, professor of pathology; Dr. Noback, professor of anatomy, and the secretary. First, the prize will be awarded at commencement time. Second, the applicant must be a *bona fide* undergraduate student of the Medical College of Virginia.

PROFESSOR NORMAN R. CAMPBELL writes to *Nature*: "Surely the time has come to abandon the practice of attaching to elements fancy names arbitrarily selected by individuals. When names concerned nobody but a small clique in constant personal communication, and when they had nothing more important to record about an element than the personality of its discoverer, there may have been something to say for the system. Now-a-days neither condition is fulfilled. Thousands are interested who have no means of expressing their opinion; and there is something definitely scientific to be said about elements. The new element was discovered as a consequence of a theory of the structure of the atom, and its discoverers should surely be glad to see a record left in the name that their discovery was no lucky fluke. Dr. Aston, who has discovered at least twice as many elements as anybody else in the history of science, has set a good example; he has waived his right of naming, undoubted under the old dispensation. He has left them unnamed until a consensus of scientific opinion has established a scientific system of nomenclature. Will not others follow his lead? Until its isotopic constitution is discovered, let us simply call the new element 72."

UNIVERSITY AND EDUCATIONAL NOTES

AT the University of Cambridge the admission of women students of Girton and Newnham Colleges to titular degrees in the university has now been approved. Among the other privileges granted to women students by the new regulations is included the right to be admitted to instruction in the university and to university laboratories and museums, though the number receiving such instruction at any one time is limited to five hundred.

THE chief engineer of the Westinghouse Electric and Manufacturing Company, Benjamin Garver Lamme; the engineer of the Philadelphia Electric Company, Paul Ortams Reyneau; and the superintendent of equipment of The All American Cable company, N. J. Perryman, will lecture at Yale this year to students in electrical engineering.

PROFESSOR W. S. WELLES has been made head of the Department of Agricultural Education at the Massachusetts Agricultural College to take the place of Professor William R. Hart, who retired on March 31.

PROFESSOR FODOR of the University of Halle, Germany, has arrived in Jerusalem to organize the plan for the biochemical institute of the Hebrew University of Jerusalem.

ADDITIONS to the endowment funds and gifts for current use amounting to about $1,200,000, received by the University of California since March 23, 1922, were read by President David P. Barrows at the annual Charter Day exercises. Four annual scholarships have been established at the Westinghouse Electric and Manufacturing Company, as a memorial to employees of the company and its subsidiaries who served in the world war. Each scholarship carries an annual payment of $500 for a period not to exceed four years, to be applied toward an engineering education in any technical school or college selected by the candidate. Scholarships are allotted by competitive examinations to (a) sons of employees in employ for five years or more; and, (b) employees continuously employed for at least two years and not over 23 years of age.

DISCUSSION AND CORRESPONDENCE

PROFESSOR LLOYD AND VEGETABLE CRYSTALS

PROFESSOR LLOYD attacks statements of mine regarding the formation of vegetable crystals, recently published in this *Journal*, because in his opinion they tend to invalidate views recently expressed by himself in the American Journal of Botany. The only reference made by him to the subject of crystals in that article is a brief one on page 157 which reads, "Chloroplasts and starch grains are usually present,

and a large stellate crystal of calcium oxalate is frequently, though not invariably to be seen." This meager statement is all that appears in this connection. It does not appear accordingly that Professor Lloyd's amour propre has really been affected by my remarks on the subject of crystallization in plants. His later expressions make it clear that it is rather the reaction of the Tong than of the individual, which is involved.

I must unfortunately take exception to some of Professor Lloyd's statements of fact. His description of his methods indicates that they are rather crude and he fails to make clear the relation of the cells described either to the growing point or to the cambium. The assertion that more than one druse is found in a cell is, whether intentionally or not, misleading. I have examined many thousands of microtome sections of the tissues at the growing point, and in proximity to the cambium in Ginkgo and various Dicotyledons. These sections have been made in all three planes, radial, tangential, and transverse, and in no instance have I ever seen satisfactory evidence of the occurrence of more than one druse in a cell. The only exception mentionable in this connection is in the case of the so-called crystal sand, commonly found in cells of the Solanaceae, etc. Here there is frequently a *single* druse accompanied by a *number* of simple crystals, but my statement was in regard to druses alone. If more than a single druse occurs in any case it must be a very rare and unusual occurrence and consequently having little bearing on the general situation.

Professor Lloyd affirms that in Ginkgo the young druses are not over half the dimensions of the nucleus. The incorrectness of this statement can readily be demonstrated objectively by photomicrographs taken in the region of the growing point and of the cambium. In these juvenile regions the nuclei of the cells are always much smaller than the diameter of the druses. Professor Lloyd's criticism that the colloidal central body in the druses "lacks the support of general observability and so becomes insubstantial" seems to reveal an inadequate technique, for invariably after removing the crystalline shell of the druse by appropriate solvents, notably weak hydrofluoric acid, the central body can be readily stained. Professor Lloyd's comparison of the "insubstantial" nucleus of the crystal with the string inside the stick of "rock candy" has the shortcomings characteristic of many mechanistic analogies. The internal central colloid substance of the compound crystal, unlike the "string," increases pari passu with the growing volume of the druse and clearly exerts an active influence both on its conformation and increase in size. The central body in crystals is in fact not only both clearly observable but is likewise very far from being "insubstantial." One interesting result of the detailed examination of crystals with adequate technique is the discovery that many forms which have been thought to occur freely in the cavity of the cell are in fact cystoliths. Cystoliths of calcium oxalate appear in fact to be much more prevalent than the well known ones of calcium carbonate, from which they differ decidedly both in form and mode of origin. I must reiterate my statement that in the case of large druses, such as are common in Ginkgo and Carya, the growth of the compound crystal continues long after all peripheral protoplasm outside has disappeared. The expanding crystal in such cases clearly brings about not only the enlargement of the cell-wall but in many instances a reshaping of its configuration to correspond to the projecting spines of the contained crystal. The truth of this statement can easily be demonstrated by the objective evidence of photomicrographs. In comparing the growth of the crystal with the development of the coats of spores Professor Lloyd seems to deal with matters which are fundamentally different.

Finally I must state that I agree heartily with Professor Lloyd that "it still remains legitimate to use what we do know to explain what we do not," but this formula should be qualified by the reservation that we must be sure that we really know what goes on in the body of living beings before we attempt to make comparison with analogous chemical and physical conditions. The mechanistic highway is strewn with wrecks arising from the neglect of this consideration. We need only mention Sachs' long held fallacious demonstration that the water must pass up through the walls of the cells of the wood because it could not possibly make its way, on physical and chemical grounds, through the lumina or cavities of the tracheids

and vessels. It may further be pointed out that no real progress was made in the study of the development of starch grains until Meyer began at the morphological end and proved that the layering was not due to any recondite physical or chemical causes as previously asserted, but rather to alternations of night and day. Such examples could be multiplied indefinitely.

It is an interesting feature of the study of religions that converts are always the most bitter assailants of the views they once held. Extremely good illustrations of this principle can be supplied from the ranks of the morphologists, who in recent years by reason of faith or expediency have turned to physiology or genetics. The set of the biological tide has however again turned towards morphology and in the near future we are likely to have abstruse problems, both genetical and physiological, receive needed light from this quarter. Nor has the fundamental biological study of the origin of species passed, as was predicted years ago, from the field to the laboratory. The field is still much more important. Experiments *in vitro,* whether in glassware or greenhouses, need to be interpreted in the clearer atmosphere of the world outside. This situation was doubtless in Professor Conklin's mind when he recently called attention to the relatively slight evolutionary results, flowing from the huge experimental activities of the past twenty years.

E. C. JEFFREY

COLORED HEARING

THE following incident seems to have several points of interest:

FULTON (aged three years, 11 months, listening to the phonograph): "Daddy, I think soft music is yellow."

DR. P. (his father, a distinguished chemist): "Yellow? And what color is loud music?"

FULTON: "Well, it is black."

DR. P.: "And what is blue music like?"

FULTON: "Blue music is loud, but not so loud as black music."

DR. P.: "Tell me, why is soft music yellow?"

FULTON (after thinking a moment): "Well, when you mark with yellow crayon on paper, you can't see it very well, but when you mark with black, you can."

Dr. P. had read an article in SCIENCE about colored hearing and explains his interest in his son's remark by the fact that it seemed to suggest a possible hypothesis as to the origin of such phenomena. The first point to notice, therefore, seems to be that there is a distinct value in such a journal as SCIENCE with its appeal to scientific men of all complexions.

For there are certain regions in which the psychologist as well as the biologist is in much the position of the astronomer, of having to wait for phenomena to occur under non-experimental conditions. Even if colored hearing could be experimentally induced, we should have little guarantee that it is the same as that "normally" possessed by many persons. It would be unduly tedious for psychology to have to wait for such evidence to be collected solely by psychologists from the observation of their own children, even were they as a class far more fecund than is the case.

The suggestion of the incident is, of course, that such associations between sounds and colors might be gradually strengthened while the connecting link dropped out of sight. Dr. P. is carefully avoiding any suggestion to the child and, at a later date, an attempt will be made to see whether the association has developed or has disappeared.

Have other readers of SCIENCE relevant observations?

HORACE B. ENGLISH

ANTIOCH COLLEGE

ACETONE IN TISSUE WORK

I WAS much interested in Professor F. M. McFarland's note (SCIENCE, July 14, 1922) on the use of acetone in place of alcohol in preparing paraffin sections for microscopic examination. Essentially the same method has been used in the laboratory of the CLINIC for about two years. Merck's acetone, U.S.P., is used. The steps in staining the slides are passing them through a series of Coplin jars as follows: two of xylene, two of acetone, one of water, one of hematoxylin, one of distilled water, one of tap water, one of acetone, one of acetone saturated with eosin, and two of xylene. The results appear quite as satisfactory as when alcohol is used in passing to and from water. State and federal regulations and restrictions for obtaining alcohol together with the high internal revenue tax make its use