

ability is promoted throughout the body cells by this substance tannin; or rather, by the derivative or derivatives of it which are absorbed in the body; the effects being mainly due to the reducing properties. A state is at length reached after long and excessive absorption of the injurious substance in which local causes are competent to precipitate the pathological mitosis and cell proliferation. These causes are various. It may be a local chemical stimulus, as by the application of a powerful sensitiser such as nicotine, or possibly "nut-gall ointment." Other local causes, as has often been suggested, may be the increased mitotic activity prevailing in the organs of generation. Here there is already a local approximation to the conditions induced by increased electro-negative ionisation. Dr. Lazarus-Barlow's results on the segregation of radium in cancerous tissues may indicate yet another local cause. Mechanical stimuli are probably responsible for the sweep cancer, etc.

The frequent recurrence of cancer after its local extirpation or destruction follows as a matter of course according to the present views. For, even apart from metastatic spread of the disease, the local cure is likely to be only temporary if the patient continues to absorb the sensitising agent into his system, or, possibly, has already permanently affected his tissues by its use. Where so much is involved, should not the physician consider the advisability of the denial to the patient of tannin-containing beverages?

The effect of tannin as an influence on mitosis is very probably responsible for the phenomenon of "vegetable cancers" or galls on trees or shrubs. Galls may contain up to 75 per cent. of tannin. These growths originate under the stimulus of irritation by some insect. Pfeffer, Sachs, and others have recognised that tannin in plants is abundant in places where growth is specially active; such as growing points, pathological growths, and places where the protoplasm is specially irritable.<sup>20</sup> We must remember that when we come to the cell there is not so much to differentiate the vegetable from the animal.

#### LIBRARY PROVISION AND POLICY.

THE Carnegie United Kingdom Trustees have published the parts which are not of a confidential character of a report on library policy prepared for them by Prof. W. G. S. Adams. Though the Trustees do not commit themselves to the policy or the recommendations of the report, they consider it will be of interest and value to those concerned in the development of public libraries in this country.

It seems that Mr. Carnegie has made 295 grants to rate-supported libraries, amounting to a total sum of 1,768,404*l.* Most of these grants extend over the period from 1897 to 1913, and vary from 400*l.* to 120,000*l.* The grants have been almost exclusively for library buildings, including in many cases furnishing, but not for endowment, maintenance, librarianship, or the purchase of books.

A table provided in the report shows that few among the libraries which have received these grants spend more than 150*l.* a year on books—a small sum if a library is to be kept moderately efficient, and that 120 libraries have an expenditure on books and binding of not more than 50*l.* per annum.

The chief criticism Prof. Adams offers concerns grants made to centres which have been unwilling or unable to support a library on the scale which Mr. Carnegie provided. It may be summed up in the word "overbuilding." Libraries have, in a number of cases, been provided, involving a scale of expendi-

ture on upkeep which left no sufficient means for the main purpose and object of the library. Buildings in several instances costing 10,000*l.* or even larger sums have been erected, the upkeep of which absorbed the greater part of the income from the *rd.* rate, leaving a mere pittance, and in some cases not even that, for the purchase of books. In certain instances, where there had previously been a library on smaller premises, the gift of the larger building has ultimately involved a reduction in the expenditure on books. In many cases there is not an adequate income to provide a librarian worthy of the building and competent to create the true library. The criticism thus reduces itself to the error of overbuilding. The suggestion is frequently made that libraries in small towns would have been more truly assisted by smaller buildings and an initial grant in aid of the purchase of books.

Among suggestions for future action made by Prof. Adams is the assistance of libraries of a specialised character. He urges the claims of special libraries to provide literature for the blind, and for doctors in rural districts. Referring to the latter, he says:—

"It has been brought to my attention by Mr. MacAlister, the secretary of the Royal Society of Medicine, with its most valuable medical library, that it would be a great benefit, especially to doctors in country districts or poorer town districts, to have available a circulating library providing them with the special literature which they may wish to consult, but which they cannot afford to purchase. It is evident at the present time, with the great development which is taking place in medical science, that it is not easy for the practitioner to keep himself in touch with the literature which is of service to him. Yet the value of a special library for this purpose would be great, and would react undoubtedly upon the well-being of the community. Technical and scientific literature is expensive, and I understand that it is with such an object in view that there has been established in the United States the Surgeon-General's Library at Washington, which circulates medical books and journals to practitioners throughout the United States."

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

A REUTER message from Cape Town on June 4 reports that Mr. Marais, late member of the Union Assembly for Stellenbosch, bequeathed 100,000*l.* for the establishment of a university there. Mr. Marais was a Hertzogite, and the request is regarded as a counterblast to the Wernher-Beit bequest of 500,000*l.* for the Central University of Grooteschuur, which the Hertzogites opposed.

MR. FRANK FINN, official guide to the Horniman Museum and Library, Forest Hill, S.E., attends at the museum on Saturday and Wednesday afternoons, when his services are at the disposal of visitors, and on Saturday mornings, when his attention is mainly given to teachers. No fee is charged. Applications for the guide's services for special parties should be made to the Curator of the Museum.

We learn from *Science* that the Circuit Court of St. Louis has confirmed the will of the late James Campbell, who left his entire estate to St. Louis University School of Medicine, subject to a life tenure of his wife and daughter. His estate is valued at from 1,200,000*l.* to 2,000,000*l.* From the same source we find that the late Mr. Ward N. Hunt, of Needham, Mass., has made Dartmouth College residuary legatee for 4000*l.*, to establish scholarship funds to be known as the Hunt scholarships.

<sup>20</sup> Haas and Hill, "Chemistry of Plant Products." (London: Longmans, Green, and Co., 1913.)

THE authorities of the University College of Wales, Aberystwyth, at the request of several county education committees, have organised a series of short courses for teachers and others at the college during the month of August next. Classes in the following, among other, subjects have been arranged: geography and nature study, rural science, and hygiene and temperance. A special course in geographical survey, nature survey, and allied subjects will be held under the joint auspices of the Provisional Committee for the Development of Regional Survey and the Department of Geography in the Aberystwyth University College. Prof. H. J. Fleure will give a course of lectures on the geography of western civilisation, and Mr. W. E. Whitehouse courses on map-reading, and local climatic surveys. The course in rural science is intended primarily for teachers in rural schools, and will include lectures on agriculture and land surveying by Mr. A. E. Jones, on agricultural chemistry by Mr. J. J. Griffith, and on school horticulture by Mr. J. L. Pickard. All inquiries with regard to the summer school should be directed to the registrar at the college.

COMMEMORATION day at Livingstone College was celebrated on June 3. The former principal and founder of the college, Dr. C. F. Harford, who is at present an officer in the Royal Army Medical Corps, presided. The secretary of the London Missionary Society, in the course of an address, said the training given at the college enables men to look after their own health, and that is an important point. In the first ten years of the history of the London Missionary Society's mission in Central Africa, eleven of the missionaries died and six were invalidated home, and with one exception were never able to return to their work. In the last twelve years there has not been a single death in the mission, nor a single case of a man being invalidated home. The average term of service of the first ten men who were sent to Central Africa was well under three years; for the last ten men sent to Central Africa, already their average term of service is more than fourteen years, and their average age about forty. The men have learned what Livingstone College teaches, the care of their own health, hygienic conditions, the need for building their houses in a healthy position and not on the side of a lake because it is a beautiful spot, the need for trying to drain the land round their houses, to avoid mosquitoes, the need for taking care of their heads when they are out in the sun.

THE pamphlet entitled "Suggestions for the Teaching of Elementary Science, including Nature Study," just issued by the Board of Education (Circular 904, price 1d.), is intended to supersede earlier suggestions on the same subject. It is a clear and practical guide, which embodies the experience of the most enlightened teachers of elementary science, and particularly of nature study. The needs of both teachers and scholars are considered sympathetically, and no more gratifying recognition of the value of nature study has, so far as we know, ever been printed in this country. Experimental science is, of course, treated slightly in the earliest stages of school life, but the beginnings of all kinds of science are here discussed with knowledge and insight. Hints to those who are called upon to prepare lessons in nature study are much more abundant than in the earlier editions, and being both practical and engaging, may be expected to kindle enthusiasm for the work. Of the many distinct merits which we find in the suggestions before us, none is more salutary than the spirit in which they are conceived and expressed. The Board of Education does

much to encourage those who, during the last five-and-twenty years, have striven to improve school methods in elementary science, and we warmly recommend its counsels, not only to teachers in public elementary schools, but to all who teach children. Had the suggestions been locked up in a big report, we should have quoted some of the more remarkable passages, but the whole document can be bought for a penny and read in an hour; to enthusiastic teachers the task will be a pleasant one.

## SOCIETIES AND ACADEMIES.

LONDON.

**Zoological Society**, May 25.—Prof. E. W. MacBride, vice-president, in the chair.—S. **Hirst**: A minute blood-sucking mite belonging to the family Gamasidæ. The mite was found on Couper's snake in the Society's Gardens, and is described as a new species of the genus *Ichoronyssus*.—H. R. **Hogg**: The spiders of the family Salticidæ, collected in Dutch New Guinea by the British Ornithologists' Union and Wollaston expeditions. One new genus and eleven new species were described.—G. A. **Boulenger**: The snakes of Madagascar, Comoro, Mascarenes, and Seychelles. The fauna of these islands is remarkable for the absence of snakes dangerously poisonous to man, with the exception of two sea-snakes known from the western part of the Indian Ocean. The paper contained a complete list of the species known to inhabit these islands, with keys to the identification of the genera and species.—Dr. F. E. **Beddard**: *Toenia tauricollis* of Chapman and on the genus *Chapmannia*. Dr. P. **Chalmers Mitchell**: The anatomy of the Gruiform birds, *Aramus giganteus*, Bonap., and *Rhinocetus kagu*. It was shown that *A. giganteus* resembled *A. scolopaceus* very closely in the details of its muscular and bony anatomy, and that the genus *Aramus*, in these respects, was very close to the true cranes.

**Physical Society**, May 28.—Dr. A. Russell, vice-president, in the chair.—Dr. H. S. **Allen**: Numerical relationships between electronic and atomic constants. Jeans has pointed out that  $hc$ , where  $h$  is Planck's constant and  $c$  is the velocity of light, has the same physical dimensions as the square of an electric charge. Lewis and Adams have suggested a relation between these quantities of the form

$$ch = \sqrt{\frac{3}{15} \frac{8\pi^5}{(4\pi e)^2}},$$

which may be written

$$\frac{2\pi e^2}{hc} = \left(\frac{15}{\pi^2}\right)^{\frac{1}{2}} = q,$$

where  $q$  is  $7.28077 \times 10^{-3}$ . The square of this numerical constant is  $p = 5.30096 \times 10^{-5}$ . The charge  $e$  on an electron in E.S.U. is found to be, within 0.1 per cent.,  $9p \times 10^{-6}$ . The ratio  $e/m$  of the charge to the mass is found to be  $p \times 10^{22}$ , with the same order of accuracy.—H. **Moore**: A method of calculating the absorption coefficients of homogeneous X-radiation. The action of X-radiation when passing through a gas is to liberate electrons from the gas. The number of electrons emitted by any atom in a beam of X-rays is proportional to the fourth-power of its atomic weight (or possibly its atomic number). Thus, equal numbers of atoms of different elements, when subjected to similar X-ray beams, will liberate amounts of electronic radiation proportional to the fourth powers of the atomic weights of the elements.