that the salivary glands of nymphs of *Ornithodoros moubata* are more heavily infected with *Borrelia duttoni* than are those of adults. There is also some evidence to show that infection of the salivary glands may die out in the course of time, so that old adults, apparently as a result of repeated feeds, rarely transmit the infection by bite.

Infection of the coxal glands in those species of ticks which do not produce any coxal fluid while feeding can have no importance in the transmission of spirochætes and such ticks transmit solely by the bite. Coxal fluid from such ticks has been shown to be non-infective although the glands themselves may be infected.

Continued experimental passage of the spirochætes through the vertebrate hosts may result in their failure to infect ticks successfully. However, by inoculating spirochætes directly into the hæmocœle, they are able to infiltrate the salivary glands and coxal glands and transmit the infection, suggesting that the gut may act as a partial barrier to the entry of spirochætes into the hæmocœle.

Some knowledge of the nature of the food imbibed by ticks and the methods of acquiring it may be of significance in assessing the timing of the intake and introduction of blood pathogens from and to the host. Examination of sections of larval and nymphal ticks feeding on rat skin by Miss Evelyn Sutton and Dr. D. R. Arthur shows evidence that a process involving the intake and digestion of non-blood tissue occurs. Moreover, field observations of adult *Ixodes ricinus* feeding on cattle revealed that ticks of the same degree of engorgement range in colour from light yellow to greyish, especially in the earlier stages. These colour differences are a reflexion of the colour of the gut contents visible through the integument, and, as afterwards confirmed by spectrophotometric analysis, the darker coloured gut contains a high proportion of blood and the lighter coloured gut a predominance of non-blood fluids. The ingestion of blood-inhabiting pathogens by the tick may accordingly be delayed for some days and in some cases may not occur at all. In certain larvæ, particularly those with short penetrant ability, it may well be that the diet is exclusively one of non-blood digested tissues, in which event the ingestion and passage of blood-inhabiting pathogens are negligible.

One of the significant features in ticks and mites is the ability of their pathogens to pass transovarially from one generation to the next. Prof. Bertram discussed how this may happen in rickettsiae, Dr. Varma showed how it occurred in ticks infected with *Borrelia duttoni* and Col. Shortt mentioned the passage of *B. canis* through the ovum of *Rhipicephalus*. Transovarian transmission in ticks and mites may be either obligatory or incidental. Prof. Garnham stated that obligate transovarial transmission occurs in *Karyolysus* and in *Rickettsia tsutsumagushi*, whereas *B. canis* for example, as Shortt described, may either progress from adult to egg to larva (that is, transovarial) or from stage to stage. Viruses sometimes pass through the egg, and spirochætes often are transmitted in this way, although the organism tends to become less virulent to the vertebrate host after such passage, and, if this is repeated for several generations, the progeny is eventually freed of infection. It has been suggested that ease of transovarial transmission in ticks may be related to the fact that only a single membrane separates the egg from the hæmocœle, whereas in insects greater insulation against the entry of viruses and pathogens is afforded by the presence of three membranes.

The proceedings of the symposium will be published in full by the Zoological Society of London.

D. R. Arthur

QUEEN ELIZABETH COLLEGE, LONDON

SIR JOHN ATKINS LABORATORIES

Queen Elizabeth College (University of London) was again honoured by a visit from H.M. Queen Elizabeth, the Queen Mother, Chancellor of the University of London, when, on May 9, she opened the new building on Campden Hill, the Sir John Atkins Laboratories. Her Majesty addressed members of the College and distinguished guests assembled outside the Laboratories, and then made a tour of the building, where she talked to a number of the staff and students who work there.

The building, designed by Messrs. Adams, Holden and Pearson, and erected by Messrs. Holland and Hannen and Cubitts (G.B.), Ltd., is six storeys of brown Buckinghamshire facing bricks, with panels of cream bricks between the lines of windows, and reconstructed Portland stone dressings. It houses the Departments of Biology, Microbiology, and Nutrition, which moved from the main College building last autumn, and released much-needed space there for the expansion of other departments. On part of the top floor there is a self-contained Isotope Unit for the use of any department needing to work with radioactive materials.

The Nutrition Department was founded in 1954, following the establishment by the University of London of the degree of B.Sc. (Nutrition), still the only degree of its kind in the world. For the first six years it worked in very restricted quarters, in part of two prefabricated huts. Now it has an area of more than 12,000 sq. ft., and is the first university department in Britain to have been specially designed for teaching of and research in nutrition. In addition to a large laboratory for forty-two undergraduates and a smaller teaching laboratory for twelve advanced students, there is accommodation for twenty-two research workers, with ten animal rooms for the rats and mice used in studying nutritional problems. Already, with the aid of grants from the research councils, from research foundations and from various industrial organizations, it has been possible to add eight graduate research workers to the staff of the Department. From this beginning the College will go on advancing by research the science of nutrition, a science which has assumed a new importance in face of the imminent danger of food production and food distribution failing to keep pace

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with the upsurge of world population; and by training a steadily increasing body of nutritionists, qualified in all the aspects of the subject—scientific, social and economic—which now make up the full study of nutrition, the College will provide the workers needed not only to help in the fight against hunger and malnutrition, but also to deal with the different nutritional problems of the well-fed countries.

The Department of Microbiology, already known for its research, but hitherto greatly hampered by lack of space, now has fully air-conditioned research laboratories and is probably one of the best equipped non-medical microbiology departments in any university in Britain. At present its undergraduate teaching is confined to ancillary courses, but if the University decides to introduce a B.Sc. (Special) degree in microbiology, Queen Elizabeth College will be among the first to provide courses for it. The large teaching laboratory, with about forty student places, is admirably fitted for the purpose. The University has just instituted a readership in microbiology tenable at the College, and from October 1961 the reader will be head of the Department.

The Department of Biology has the whole of the ground and first floors and part of the lower ground floor of the new building for zoological and botanical teaching and research. In its old premises it had little room for research workers. Now it has accommodation for twenty, including the teaching staff, and already six postgraduate research workers have been added to the Department, including one post-doctoral Research Fellow. The two teaching laboratories each have sixty places for undergraduates, and the College, which already had one of the biggest entries in the University for the B.Sc. (General) degree, hopes to be able to increase the number still further. Britain needs specialists, but it also needs many scientists with a broad and balanced education for industry, for teaching, and for many other important walks of life. This need is well filled by graduates with a London B.Sc. (General) degree, and the College aims at seeing that this degree is accorded the importance it deserves.

It is most fitting that this new building should be named after Sir John Atkins, the first Fellow of the College. Sir John was largely responsible for the foundation of the College. As a young doctor he felt so strongly the need for a college where domestic subjects could be taught with a proper scientific background that in 1911, by his own efforts, he raised the necessary funds for the erection of the main buildings in Campden Hill Road. He joined the Governing Body in 1912 and still serves on it. Through all these years he has watched over the interests of the College, and cherished its aims. For thirty-six years, as chairman of the Council, he guided it through the most crucial stages of its development. The Sir John Atkins Laboratories will be a permanent reminder of all that past, present and future generations of students owe to him.

DAMAGE BY *RHIZINA UNDULATA* IN CONIFEROUS PLANTATIONS

THOSE who attempt to establish, or re-establish, forests artificially on land on which there was never any natural forest, or from which every remnant of a natural forest soil has long since disappeared, are always liable to encounter fresh trouble. This fact is brought home forcibly in a recent publication by the Forestry Commission which is concerned with a fungous disease which, significantly, has been observed to be serious mainly in plantations recently established on non-forest soils*.

The title, *Group Dying of Conifers*, is unfortunate. Groups of trees may die for a variety of reasons as, for example, from strikes by lightning, from deposition of toxic materials, like manure heaps, within the stand, from attacks by fungi other than *Rhizina*, and so on, and why this forest record is not simply entitled *Rhizina undulata* with an appropriate equivalent in English is misleading and difficult to understand. A suitable name would appear to be the 'fire-site fungus'.

Rhizina undulata Fr. ex Fr. is described as 'colonizing' the sites of fires lit during forestry operations in pole-sized stands. From these sites it spreads outwards over a limited period of years, with the result that groups of dead trees occur within the stand. In some cases these breaks in the canopy give access to strong winds and form starting points of what may develop into serious windthrow. *Rhizina* has been recognized as a parasite since 1894, and has been described from both eastern and western States in the United States as well as from Europe. Significantly, it does not appear to attack leaf-tree species, only conifers. The first record of so-called 'group-dying' in Great Britain seems to have been in 1936, but it is only since 1953 that *Rhizina* has been frequently observed associated with groups of dead trees in the British Isles.

Messrs. Murray and Young, on the basis of a study of dead groups of trees in 58 forests or estates in Britain, 50 of which are situated along the western seaboard, have clearly confirmed that the fungus becomes recognizable on fire sites, and a very large proportion of the dead groups were associated with fires. This has led to the prohibition of all fires, even those lit for the brewing of tea, in or near the plantations of the Forestry Commission. This means of control can be strongly recommended to other forest owners, although it is often difficult to overcome the passion for tidiness which seems normally to be associated with artificial plantations.

The general history of the disease and its behaviour are described together with a more detailed survey of two infested forest areas in Scotland. There is an excellent description of the fungus itself; but in discussing the nature of the attacks and the behaviour of the fungus the authors have obviously been handicapped by inadequate experience of site examination and by the prevailing ignorance of soil organisms, including fungi, and of their relationship

* Forestry Commission. Forest Record No. 46: *Group Dying of Conifers*. By J. S. Murray and C. W. T. Young. Pp. 19 + 12 figures. (London: H.M.S.O., 1961.) 3*s*. net.

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