

of the inhabitants of Berlin. This anomaly is inherited as a dominant, lethal in the homozygote but not affecting the expectation of life of the heterozygote. The same anomaly occurs in rabbits: here a few homozygotes survive and they show no segmentation at all, and extreme chondrodystrophy with an array of secondary morphogenetic and functional disturbances.

The demonstration of work in progress in most genetic laboratories in Great Britain, with visits to the Cambridge laboratories, included forty-three different lines of research. They ranged from the mapping of mammalian chromosomes to the biochemical genetics of bacteria and other micro-organisms; from the developmental genetics of the mouse to the inheritance of human blood groups; and from experimental studies on the properties of nuclear membranes to the genetics of heterostyly in plants. It is quite impossible, of course, to go into details of this very impressive and comprehensive demonstration.

The meeting has certainly left in those attending it a vivid picture of genetics in its fiftieth year. Started as the somewhat detached, though extremely successful, study of what Muller calls the "dance of the genes", genetics now occupies a key position in biology. The genetical approach, that is, the study of sub-cellular 'self-reproducing' units, is now as essential to the understanding of heredity, variation and evolution as it is in bridging the gap between biochemistry and biology. At the level of these units, biological structure and biochemical activity tend to become one.

G. PONTECORVO

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DEFENCE RESEARCH LABORATORIES, AUSTRALIA

ANNUAL REPORT

9/29/49

THE Munitions Supply Laboratories of the Commonwealth of Australia Department of Supply and Development have now been re-named as the Defence Research Laboratories; and the first annual report under that title*, covering the year ended June 30, 1948, shows that the establishment is becoming recognized as the main Australian centre for the application of science and technology to the day-to-day problems of industry, whether for defence or civil production, as well as being the main standardizing centre for the southern part of the Commonwealth. Long-term investigations represented about 21 per cent of the work of the Laboratories, while 40 per cent was for the Department of Supply and Development and Defence Departments, 23 per cent for other Government Departments or public bodies and 16 per cent for private industry. A new section for electricity and a crystal physics group were formed during the year.

In the General Chemistry Section study has continued on the use of organic titanium compounds in paint; methods of accelerated outdoor-exposure testing; the influence of seasonal variations of weather; and the formulation of roof paints to suit Australian conditions. Studies are being made of the oil obtained from the Makita nut, available in

* Commonwealth of Australia: Department of Supply and Development. Annual Report of the Defence Research Laboratories for the Year ended June 30, 1948. Pp. 46. (Marburyring, Vic.: Defence Research Laboratories, 1949.)

large quantities in Fiji and New Guinea; as well as of methods of assessing the damage to wool caused by shrink-resistant treatments and of detecting and estimating damage to cotton fibres on exposure. A method has been worked out for the preparation of amylene, and advances have been made in the techniques of fractional distillation.

In the Chemical Defence Section a considerable amount of work has been carried out on the determination of airborne water droplets in a saturated atmosphere, on the factors governing the flow of gases through small orifices and capillaries, and on a critical survey of chemical methods used for the determination of atmospheric contaminants, as well as a study of the protection afforded by the service respirator against a wide range of industrial contaminants. The Metallurgy "A" Section was largely concerned with investigations on metal processing and the behaviour of metals in service, while in the Metallurgy "B" Section radiographic examination of welded pressure vessels and the training of workers in industrial radiography have been important features. Long-term investigations in the Engineering Section have been concerned with the effects of surface treatments on fatigue characteristics of an alloy steel. The Physics Section surveyed formulae expressing the refractive index of optical glasses as a function of wave-length and investigated mass spectrometric and ionization-gauge methods of detecting leaks in vacuum systems.

Inquiries received by the Technical Information Section markedly increased from 749 in the previous year to 1,288, of which almost half were from private industry. Some 36 per cent of the inquiries related to chemistry and chemical technology, 22 per cent to physics and engineering, and 20 per cent to metallurgy. Lists of published articles and lectures and of committees on which the staff of the Laboratories have served are appended, but the report does not deal with confidential work for the Armed Services.

10/6

SUGAR RESEARCH FOUNDATION

ANNUAL REPORT

9/29/49

THE Sugar Research Foundation, which is an organisation supported by the great majority of both cane- and beet-sugar producers and refiners of United States territories, has recently issued its sixth annual report*. This document, prepared by the scientific director, Dr. Robert C. Hockett, enumerates the research projects, both those completed and in progress, which have been sponsored by the Foundation, and briefly describes the results so far obtained. The numerous investigations are concerned with sugar (sucrose) in relation to dentistry, physiology, nutrition, botany, biology and pharmacy, as well as the organic and physical chemistry of the substance.

The Sugar Research Foundation was organised to sponsor and to stimulate research on sugar and to disseminate information about it. The way in which the Foundation has organised research on sugar is strikingly demonstrated in its latest report, which describes no fewer than fifty-nine projects that either have been, or are still being, undertaken in

* Research in Review. Sixth Report, 1949. Pp. 44. (New York: Sugar Research Foundation, Inc., 1949.)

American universities or government laboratories. The magnitude of this effort may also be gauged by the fact that the annual budget of the Sugar Research Foundation has been well over 500,000 dollars for the past three years. A perusal of the research projects shows that marked emphasis is being put on nutritional and physiological aspects of research on sugar. Dr. Hockett, in his preface to the report for this year, gives a reason for this when he reminds his readers that the sugar industry is one of the largest of the food industries, and that sugar, grown either as cane or beet, provides more calories per acre than any other foodstuff.

Since it is a function of the Sugar Research Foundation to develop the potential of sugar as a raw material for industry, several topics dealing with the production of chemicals from sugar are included in the projects being studied. It is interesting to note that one derivative of sucrose, allyl sucrose, shows marked promise of usefulness as a varnish-type coating possessing high resistance to solvents and temperature. The importance of the fermentation of sucrose and molasses is recognized, inasmuch as several projects deal with fundamental studies on the growth of various micro-organisms on molasses and on organisms which produce fats from carbohydrates. Enzymes, such as invertase, receive special attention. Of the topics dealing with physiological aspects, that dealing with the absorption of sugars (glucose, fructose and sucrose) from the stomach and small intestine would seem to be of considerable importance; it is found that, contrary to 'orthodox physiology', there is a marked difference in the behaviour of these three substances in the stomach, so much so that diabetic patients fed on a sucrose diet can tolerate more carbohydrate than those fed on a glucose diet, and it was found possible to reduce the insulin requirements of the former group. Use is also being made of radioactive elements in studying the decomposition of sugars in the animal body and in investigating the formation and degradation of sucrose in plants.

In carrying out its function of disseminating information on sugar, the Sugar Research Foundation has rendered an invaluable service to workers in the sphere of carbohydrate research by the publication of its scientific and technological reports, which so far have reviewed seventeen important fields of study.

FOREST RESEARCH IN SWEDEN

THE reports of the Forest Research Institute of Sweden for 1948-49* contain some interesting articles, among which may be mentioned: "Solid volume in stacked pulpwood of pine and spruce (length of sticks 3 and 3 metres) and the volume of solid round wood (with bark) in relation to stacked volume", by K. Eckland; "Studies on the biology of the Phacidium blight (*Phacidium infestans*, Karst) and its prevention", by Eick Bjorkman; "A quick method of determining the germinality of pine and spruce seed", by Lars Tirén; "The sensitivity of some wood and meadow plants to sodium chlorate",

by Ake Domeij; and "The National forest survey of the province of Kopparberg carried out in 1933 and 1934", by Erik Hagberg.

There are two other papers which are perhaps of considerable professional interest to British Empire foresters. The first is by Ake Wiksten, "On some factors of importance for the sowing result and preliminary results from some experiments with covered patch sowing". The author discusses this investigation as follows. When sowing is carried out in places that are to a particularly high degree exposed to a scorching sun and withering winds or in which the structure of the soil is of a quality likely to conduce towards soil-lifting through frost, special arrangements should be made in order to mitigate the influence of the damaging phenomena. The best sowing method from a physical point of view is termed covered patch sowing and is carried out in the following way. The humus cover is removed and the surface of the mineral soil is scraped clean, after which the seeds are spread and the seed spot is trodden smooth. It is afterwards covered with a layer one-fifth of an inch deep ($\frac{1}{5}$ cm.), consisting of a suitable organic material, for example, ant-hill litter, peat litter (peat moss), powdered mud-peat, rubbed humus or sawdust; as an alternative, spruce branches, or branches of a similar covering capacity, can be used as cover. The investigation has shown that this type of cover affords a good protection against drought. Thus when sawdust or ant-hill litter was used, the number of plants per seed spot showed a considerable increase (60-100 per cent). The results of the investigation should prove of considerable advantage when sowings of this type are made in tropical countries.

The other paper, entitled "The distribution of the valuable broad-leaved species over site classes in Halland, Skåne and Blekinge according to the national forest survey 1945-1946", is by Charles Carbonnier. This investigation is based on a national survey of the forest regions which has been already made, the aim being to study the distribution over site classes of stand types containing oak, beech and ash in Halland, Skåne and Blekinge. The results can, on one hand, give rise to certain conclusions concerning the question as to how far the site requirements of the various tree species can be considered to have been met, and, on the other, form the basis of a discussion of the general conditions prerequisite for the production of valuable broad-leaved species within the area investigated. The main results of the investigation may be summarized as follows. (1) The site requirements of beech and ash seem to have been reasonably well fulfilled. Their appearance seems to be chiefly bound to good soils. (2) Oak appears with approximately the same frequency in all site classes. It is most weakly represented in site class 1, however. (3) Fully half the areas covered with oak in pure stands and mixed with birch are accounted for under wooded-pasture land. (4) The distribution by area of the various site quality classes over stand types indicates that there is room for an extended production of valuable broad-leaved species within the higher site classes.

The Forestry Commission has been undertaking a national forest survey in Great Britain. In the interests of extending the areas of the valuable hardwood species of the country, an investigation in the suitable hardwood areas of Britain on the lines of the one carried out by Charles Carbonnier in Sweden should prove of high importance and value.

* Meddelanden från Statens Skogsforskningsinstitut. Band 37, 1948-1949. Pp. 676. (Stockholm: Statens Skogsforskningsinstitut, 1949.) 14 kr.