

BRITISH MATHEMATICAL COLLOQUIUM AT OXFORD

THE second British Mathematical Colloquium was held at Oxford during April 12-14. More than a hundred and twenty mathematicians assembled from all parts of the British Isles, and the meeting also attracted a sprinkling of foreign visitors from Egypt, Holland, India and Italy. The members were comfortably accommodated at Jesus College, and the main lectures were held in the Physical Chemistry Lecture Theatre.

This gathering of ('pure') mathematicians will now become an annual event. The first Colloquium was held at Manchester last September, and the next one will take place at Bristol in September 1951. For the present year, April was chosen to avoid a clash with the first post-war International Congress of Mathematicians which is due to meet in Cambridge, Massachusetts, during the first week in September.

The aim of the British Mathematical Colloquium is twofold: in co-ordinated lectures of one hour's duration surveys are given of the progress in some important field of research which are meant to be—and indeed succeed in being—intelligible to the non-specialist and enable him to keep himself informed of major developments; and in the more intimate atmosphere of 'study-groups', mathematicians with common interests in special branches of their science report on their results and raise and discuss problems for further research. While the former meetings are more instructive, the latter tend to be more stimulating.

One of the surprises of the Oxford meeting was the awakening interest in modern algebra among mathematicians in Great Britain. There have been many eminent British algebraists during the past hundred years—it is sufficient to mention the names of Hamilton, Cayley, Sylvester, Burnside and Young; but they founded no schools, and algebra was allowed to lapse almost into oblivion. The startling developments which originated in Germany during the twenties and rapidly spread to other countries, notably the United States and the U.S.S.R., were too long ignored in Britain. All this is changed now: at Oxford algebra stood in the forefront of interest. Among the most successful lectures there were those which dealt with: the impact of modern algebraic concepts and methods on analysis; the algebraic theory of valuation and its many applications, which range from the theory of ideals in rings to the foundations of algebraic geometry; the interaction of algebra and topology in the theory of topological groups; and the way in which topology begins to repay for the services rendered to it by algebra. This was exemplified in the concept of co-homology, which arose in topology but is capable of an algebraic interpretation and treatment. Moreover, the liveliest of the discussion groups was that on algebra. There were other groups: on the theory of numbers, on algebraic geometry, on random functions and on non-linear differential equations. But the algebraists were insatiable; long after the Colloquium had ended 'officially' and the other groups had concluded their proceedings, the algebraists still went on proving, discussing and conjecturing.

An important feature of the Oxford meeting was a lecture by Prof. B. Segre, of the University of Bologna, who was enabled by the co-operation of the British Council to prolong his visit to Great Britain.

In a brilliant performance, worthy of the tradition of the great Italian school of geometry, he demonstrated the solution of a problem which was proposed to him only a fortnight before by Prof. J. G. Semple, of King's College, London, namely, to characterize the inflexional curve of an algebraic surface in four dimensions.

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ANTIBODIES IN FOOT-AND-MOUTH DISEASE

THE Report Series issued by the Agricultural Research Council already includes eight useful publications on a variety of subjects. No. 9 of this series, written by Dr. J. R. Brooksby and entitled "The Antibodies in Foot-and-Mouth Disease"*, reports work carried out under the Foot-and-Mouth Disease Research Committee of the Agricultural Research Council as part of a programme of work designed to develop reliable standard methods for the study of this disease.

Part 1 discusses the detection and measurement of antibodies to the virus of foot-and-mouth disease. The methods used for the estimation of antibodies are reviewed, and the best conditions for the conduct of the guinea-pig protection test are described. This test has, however, a limited value. The best method of assay of antibody titre is the bovine neutralization test, and examples are given of the use of this test for the detection of antibody in sera of vaccinated cattle. The result of the neutralization test in one large experiment has been correlated with the determination of the protective power of convalescent serum against contact infection in cattle and against the inoculation of virus on the tongue. The typical convalescent serum used gave a fair measure of protection at a dose of 50 ml. per cwt. under conditions of exposure to infection which were more severe than those usually encountered in the field. A dose of 150 ml. per cwt. gave complete protection. Attempts to use the complement-fixation test for the measurement of antibody showed that this test is not successful for this purpose with bovine sera or concentrated antibody solutions.

Part 2 of the report discusses the distribution of the antibody in the serum fractions and also the preparation of concentrated antibody solutions. The association of the antibody with the euglobulin fraction obtained by ammonium sulphate precipitation has been demonstrated, but the partition of antibody between euglobulin and pseudoglobulin varies very much in different sera, especially before the fourteenth day of convalescence. There appeared to be a similar variation in the distribution of antibody in fractions obtained by electrophoresis.

Direct evidence of the activity of other fractions has not yet been obtained. A simple method used for the preparation of concentrated antibody solutions has produced solutions six to eight times more potent than convalescent serum. Doses of 19 ml. per cwt. of one of these preparations had a protective value equal to that of 150 ml. per cwt. of the original serum. Dr. Brooksby quotes experimental results which show that alcohol precipitation helps the demonstration of antibody in sera in which its concentration is low.

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* The Antibodies in Foot-and-Mouth Disease. Agricultural Research Council. Report Series, No. 9. By Dr. J. R. Brooksby. Pp. vii + 87. (London: H.M. Stationery Office, 1949.) 3s. 6d. net.