

Extracts from College Annual Report 1950/1951

DEPARTMENTAL REVIEW

The new degree courses still provide a major problem in the organisation of lectures and laboratory work, and although the abolition of the Intermediate Science Course will bring some relief, there will still be a net increase in the total of lectures given during the session. It is hoped that the new courses for the Special degrees, including Ancillaries, will be reasonably well stabilised by the end of the Session 1951-52.

The additional accommodation made available last year has proved of great value—and a tribute is due to the College authorities for the speed with which the rooms were prepared for use, under very difficult conditions. Apparatus and materials for research ordered many months ago, have begun to come in, and there has been a very considerable increase in the volume of research going on in the department. At present over a dozen experimental or theoretical problems are under investigation by members of the staff and by research students. The main emphasis is on the physics of the solid and liquid states, both in its theoretical and its experimental aspects, and in addition there is work in progress on acoustics—a subject which, in spite of its important applications has been largely neglected in our Universities. Although the department is concerned only with fundamental research, and not with technical developments, useful contacts have been made with industrial research organisations and manufacturing firms, from whom we have received valuable help and advice—and who are showing an increasing eagerness to employ our graduates.

Much of the experimental work in progress relates to the properties of matter at very low temperatures, and special efforts are being directed towards making easily available temperatures within a few degrees of the absolute zero. A miniature helium liquefier of novel design has been built in the department and was successfully operated during the last month of session. This will make possible to work down to temperatures as low as 1° absolute. Three small hydrogen liquefiers (for work down to about 12° absolute have also been built. Microwave, ultrasonic and high-pressure techniques are also being developed for application to particular problems.

There is now every hope that, given the necessary funds, the College can develop as a University centre of cryogenic research. With existing accommodation, we can continue to take four or five of our honours graduates each year for low temperature research, in addition to some workers from other centres. The theoretical investigations in progress are closely related to the main experimental work of the department, and in this connection we have been particularly glad to welcome the appointment to an Imperial Chemical Industries Fellowship of Mr. R. O. Davies, who came to us this session from the Clarendon Laboratory, Oxford.

The expansion of experimental research of an entirely new type has necessitated the equipping of a small departmental workshop and the establishing of a store to serve both research and teaching requirements. Provision has been made for Special Honours students to gain some experience in workshop and simple glass-blowing practice, and third-year students, as part of their training for the Part II examination, have been contributing to the expansion of research in the department by undertaking small sections of the larger projects which are in the hands of senior workers. The freedom to do this, which has been conferred by the change in the degree Regulations, is proving to be one of the major advantages of the new Science courses.

A start has been made with a Departmental Library, the use of which is for the present restricted to senior students and research workers.

Colloquia and research seminars have been held at fairly regular intervals, and will, it is hoped, be held more frequently in future.

PUBLISHED WORK

H. R. ROBINSON

Voltage Variations of Lead-Acid Accumulators at Small Discharge Rates, letter in *Journal of Scientific Instruments*, 1951.

R. K. EISENSCHITZ

Recent Theories of Transport Processes in Liquids, *Nature*, 1 Y51,

G.O. JONES

A Thermal Switch for Use at Low Temperatures, *Journal of Scientific Instruments*, 1951.

With F. E. SIMON: Was ist Glas? *Physikalische Blätter*, 1951.

With A. J. HOLLAND and J. A. W. HUGGILL: The Solid-fluid Equilibrium of Helium above 5000 atmospheres' Pressure, *Proceedings of the Royal Society*, 1951.

An Oil-free Gas-tight Compressor, *Journal of Scientific Instruments*. (In the press)

Structure (of glass) in Glass and W. E. S. Turner, 1916—51, *The Society of Glass Technology*. (In the press.)

Review: J. Home Dickson, *editor: Glass, Research*. (In the press.)

E.J. IRONS

Reviews: V. O. Knudsen and C. M. Harris: Acoustical Designing in Architecture, *British Journal of Applied Physics*, 1951.

J. Duncan and S. G. Starling: Text Book of Physics, Part IV Sound, *British Journal of Applied Physics*, 1950.

J. W. LEECH

With D. R. BATES, A. FUNDAMINSKY and H. S. W. MASSEY: Excitation and Ionisation of Atoms by Electron impact—the Born and Oppenheimer Approximations, Parts I and II, *Philosophical Transactions of the Royal Society*, series A, 1950.

C.A. HOGARTH

Hall Constant of Cadmium Oxide, *Nature*, 1951.

DEGREES AWARDED

Ph.D.

J. WOODS July 1950
J. S. BLAKEMORE February 1951

M.Sc.

G. BURNAND July 1951

B. Sc. SPECIAL EXAMINATION PHYSICS

First Class Honours :

P. B. BRANSON
B. F. FIGGINS
J. A. HULBERT

Second Class Honours (Upper Division):

DOROTHY J. HARRINGTON
B. L. HART
D. L. MARTIN
N. B. TERRY
J. THRAVES

Second Class Honours (Lower Division):

D. M. BALMFORTH
J. A. CHAMPION
R. S. GIBBONS
R. F. HALL
C. W. SULLIVAN
G. A. WILLIAMS

Pass:

A. N. D. YOUNG

