

to 0.04° K., whilst with potassium chromium alum, and the large magnet of the Leyden laboratory, de Haas has reached 0.015° K.

Insulation at these temperatures is an easy matter, since radiation becomes negligible, whilst the vacuum round the substance is very high on account of the low temperature itself. This is illustrated forcibly in the accompanying table, which shows the vapour pressures of helium (the gas with the highest vapour pressure) at various temperatures.

Vapour Pressures of Helium	
T (°K)	p (mm.)
1.0	1.5×10^{-1}
0.7	3.2×10^{-2}
0.5	2.5×10^{-3}
0.3	7×10^{-10}
0.2	3×10^{-15}
0.1	3×10^{-21}
0.05	4×10^{-22}
0.03	6×10^{-103}

It is interesting to note that the temperatures obtained by the demagnetisation technique are below any found in Nature. Even in inter-stellar space, radiation maintains a body at least 2° K. above absolute zero.

To examine the properties of other substances at these very low temperatures, a small pellet is

made by mixing the substance to be examined with the paramagnetic salt. By this means, several new supra-conductors have been discovered, though even at 0.05° K. there are metals which do not show supra-conductivity. Again, it immediately becomes evident if the specific heat of the admixed body is abnormal, and consequently gives an indication of any phenomena involving energy changes in this region.

Finally, it must be emphasised that research in this low temperature region will be productive of fresh results; the effort to progress towards the absolute zero is not merely directed to the creation of fresh 'records' but to actual study of changes associated with energy increments of such magnitude that only in this region can they be observed.

During the course of the lecture, the liquefaction of helium by the method explained above, of compressing the gas to 100 atmospheres, cooling it to 12° K. with solid hydrogen and then allowing it to expand, was demonstrated. The phenomenon of supra-conductivity in lead was shown at the temperature of the liquid helium, the current being produced and its existence shown by magnetic means.

Norwich Meeting of the British Association

THE preliminary programme of the British Association meeting in Norwich on September 4-11 has now been issued. The president, Prof. W. W. Watts, announces the subject of his address as "Form, Drift, and Rhythm of the Continents". It would be difficult to conceive a title better capable of intriguing thoughtful laymen. That continents possess form they will no doubt appreciate, but the ideas that continents should drift, and possess rhythm, ought to make them eager to learn. It is to be hoped that it may be made easy for them to do so, for, to say truth, the Association in its endeavours in recent years to apply the advancement of science to the needs of its members, by reinforcing the voices of presidents through amplification, has been singularly ill-served as a rule.

The building in which the address will be given is not yet settled, but the other rooms which will be in use by the Association are very conveniently placed. In St. Andrew's Hall, formerly the fifteenth century church of a Dominican foundation, the business of the Reception Room will have a most imposing setting. None of the section rooms is so much as half a mile from it; seven of them are immediately adjacent to it. Norwich, once the visitor has learned the intricacies of its medieval streets, is unusually well provided with the type

of accommodation demanded by the Association. As for the lodging of visiting members, the local committee, foreseeing some possibility of difficulty if members were left to make their own arrangements, offer to procure hotel or other accommodation for them, and indeed advise them not to communicate with hotels direct. In this connexion it should be remembered that those who wish to combine a holiday with the meeting, and are not too closely tied by the business of the Association, have unusual opportunity to obtain pleasurable accommodation elsewhere than in the city. The preliminary programme includes a long list of hotels (with prices) at Bacton, Caister, Cromer, Gorleston, Yarmouth, Holt, Lowestoft, Mundesley, Overstrand, Scole, Sheringham, West Runton and Wroxham, as well as in Norwich itself.

The two customary evening discourses are announced. That by Dr. S. J. Davies will deal with Diesel engines in relation to coastwise shipping—a subject of topical interest (as it may be surprising to some to know), for the number of coastwise trading vessels which make their way up-river to Norwich has increased of late years. The other discourse will enter a field of still wider public interest: Dr. C. S. Myers will speak on the help of psychology in the choice of a career.

The programme announces a distinguished series of addresses by the sectional presidents. Dr. F. W. Aston will speak in Section A on the story of isotopes. The address in Section B, by Prof. W. N. Haworth, will introduce a discussion on the molecular structure of carbohydrates. Prof. G. Hickling in the geological section will deal with some aspects of coal research. Prof. Balfour-Browne's address to Section D will be on the species problem. The geographical section will follow its president, Prof. F. Debenham, to the polar regions. Prof. J. G. Smith will give the address in Section F on economic nationalism and foreign trade. Mr. J. S. Wilson's address to the engineers will be on the stability of structures. In view of the regretted indisposition of Sir Cyril Fox, who was to have presided over Section H, the Association is fortunate indeed to have enlisted the services of Sir Arthur Smith Woodward, who, as it happens, has not previously presided over that Section; he will address it on recent progress in the study of early man. The address to the physiological section will be given by Prof. P. T. Herring on the pituitary body and the dien-cephalon; that to Section J (Psychology) by Dr. Ll. Wynn Jones on personality and age; and Section K (Botany) will hear Mr. F. T. Brooks on some aspects of plant pathology. Dr. A. W. Pickard-Cambridge's address to Section L (Education) will deal with education and freedom, and Dr. J. A. Venn will speak to the agricultural section on the financial and economic results of State control in agriculture.

It is well known that last year, in preparation for the Aberdeen meeting, the Council of the Association issued to the organising sectional committees a reasoned statement inviting their special attention to subjects bearing upon the relations between science and the welfare of the community. Good effect was given to this request, and the results were favourable in respect of the additional public interest aroused by the meeting, while the daily and non-technical Press showed its appreciation of the choice of material provided for it by noticeably avoiding trivialities of its own creation. This year the Council reminded the committees of its previous memorandum, and brought these considerations to their notice; and already there is no lack of subjects of public interest in the Norwich programme. The Association is to make striking use of its mechanism for joint sectional meetings in bringing together engineers and psychologists to discuss the application of science to traffic problems. Among other subjects which may be instanced in this connexion are those of noise and of lubrication in Section A; Section D will find itself near enough to the east coast to continue its practical interest in the

herring; Section E will consider local town-planning and land utilisation. Section F has its usual array of important economic problems for discussion, and will also deal with the chronology of the world crisis, on which a committee of the Association will shortly publish a full report. Hearing and aids to hearing will be considered by the Sections of Physiology (I) and Psychology (J); the place of psychology in the training of teachers by Sections J and L (Education). Section L will stage demonstrations illustrating physical education. Section M (Agriculture) will base a discussion on the results of State control in agriculture upon the address of its president, Dr. Venn.

The local scientific interests of East Anglia are great and varied, as is very well known. The geologists will be within reach of classic ground for glacial geology, and none will willingly miss the unusually valuable opportunity offered by a few days' tour of coastal and inland sections in Norfolk from Hunstanton to Cromer and Bacton, under the guidance of Prof. P. G. H. Boswell, immediately before the meeting. Geologists and anthropologists together will inevitably discuss early man in East Anglia. Botanists and agriculturists will interest themselves in land utilisation in the unique area of the Breck country, and East Anglia offers Section M an unusual variety of agricultural activities for its study. The list of proposed excursions offers evidence of all these interests and more besides.

In Section D (Zoology) there will be a commemoration of the centenary of the landing of Darwin in the Galapagos Islands (which falls a few days after the meeting) and the birth of the Darwinian hypothesis of the origin of species. For the Association, as the custodian of Darwin's home at Downe, such an occasion is appropriate for remembrance. Moreover, there is in this subject a throw-back, so to say, to the last meeting of the Association at Norwich, in 1868; for J. D. Hooker was the president of the Association then, and had much to say of Darwin, while in Section D the Rev. M. J. Berkeley as president paid high tribute to him, though the voice of another clerical speaker was still uplifted in doubt, and associated the varieties of forms and species with "laws of nature inscrutable to us".

An evening reception by the Lord Mayor and Lady Mayoress (Mr. and Mrs. P. W. Jewson) is announced to take place in the Castle Museum, and a statelier setting could scarcely be found elsewhere. H.M. Lieutenant for Norfolk, Mr. Russell J. Colman, and Mrs. Colman, will give a garden-party in the beautiful grounds of Crown Point.