

several weeks and some courtesy showed me by the local authorities I received the bluntest refusal to my request for a small supply of duty-free alcohol at my private laboratory in Cambridge, and this in spite of the fact that owing to an accident I am permanently prevented from leaving my house and availing myself of the duty-free alcohol at the biochemical laboratory of the University. H. ONSLOW.

11 St. James's Square, S.W., February 19.

MANY who, like myself, are privately engaged in biological research, will feel grateful to Sir William Ramsay for having directed attention to the difficulties which are unreasonably put in their way in regard to the supply of alcohol. May I take this opportunity of adding that, for those not connected with some university or museum, the only methylated spirit obtainable is adulterated to make it undrinkable, which also makes it absolutely useless for the operations of the biologist, who is thus driven to incur great expense in the purchase of alcohol. Some time ago I applied to the excise officers here for a licence to be supplied with methylated spirit for use in research work, and I offered to enter into any bond and to comply with any regulations they liked to impose to ensure its safe custody and honest use. After a correspondence extending over nearly three months, this licence was refused. I hope that Sir William Ramsay's letter may receive attention in the proper quarters, and that reasonable facilities may be given for the supply of both alcohol and methylated spirit for the purposes of research.

ARNOLD T. WATSON.

Sheffield, February 22.

Cement for Polarimeter Tubes.

I SHALL be much obliged if any reader of NATURE will suggest a cement suitable for fastening the end discs to polarimeter tubes. The cement I should like to hear of should be capable of withstanding the action of organic liquids at temperatures between 200°-300°. Fusion of the discs to the tubes would, of course, be best, but would be almost certain to introduce strain. There is no great difficulty in working without cement up to about 200°, but beyond the temperature at which rubber melts—and is, therefore, unsuitable for washers—the problem of keeping the liquid in its tube is by no means a simple one. Possibly someone engaged in work making similar demands may be able to assist me.

T. S. PATTERSON.

University of Glasgow, February 20.

The Prices of Chemicals.

"J. J.'s" complaint against chemical dealers for unduly raising prices in consequence of the war seems to have been unjustifiable in the case he mentioned, but it would apply in some other cases. A few weeks ago I wrote to several dealers for some racemic acid; one firm, who had a stock of only half an ounce, let me have it at the pre-war price, whilst another, with a larger stock, charged me just double. S. P.

THE MANUFACTURE OF DYESTUFFS.

THE GOVERNMENT'S MODIFIED SCHEME.

THE discussion on the various aspects of the problem of producing in this country an adequate supply of dyestuffs proceeds without intermission. The question has for some time assumed a national aspect and has been the subject of Parliamentary debate or question on at

NO. 2365, VOL. 94]

least three occasions. It has also been debated at meetings of the Chambers of Commerce in the chief industrial centres, and people most directly interested have had many opportunities of expressing their opinions at meetings of their various organisations, or at gatherings specially convened for the purpose.

To a great extent the discussions have centred round the adequacy and equity of the commercial proposals involved in the official scheme now before the public. These have received much more general acceptance than those put forward in the first scheme, and it appears probable that the committee has now received promises of support to an amount representing a substantial proportion of the initial capital proposed for the new company.

The members of the committee themselves admit that it is an easy matter to criticise the scheme adversely, and it is obviously impossible to devise a solution of the problem satisfactory to all minds.

If the matter is to be viewed as an ordinary commercial proposition, if questions of free trade or protection are to be taken into account, or if early dividends are to be assured, then any scheme which might be put forward could be shown to be unworthy of support. But whilst criticism on these lines has been plentiful, there has latterly been a rally of support by those taking broader views—a support which has probably been largely induced by a sense of national need, and has certainly been greatly developed by the action of the Government in offering to endow the research work which is essential to the extent of 100,000l. This action has engendered a feeling of confidence that the Government will take any further steps which the future may show to be vital to the success of the British dye manufacturing industry.

It is to be hoped that the committee in charge of the scheme will shortly be able to announce the results of its inquiries and that these will show that the great textile trade of the country has responded adequately. In the meantime, the arrangements for carrying out the necessary preliminary chemical work should be proceeded with.

A Mobilisation of Chemists.

Speaking in Bradford on February 8, the present writer advocated immediate action by the Government or the Board of Trade Advisory Committee in the direction of utilising the services of British chemists. There is on one hand a large amount of chemical work to be done before the industry can be greatly developed, and on the other, there is a great number of well-staffed and well-equipped laboratories in our universities and technical colleges which might render great service to the industry. To avoid wasteful duplication of work and to co-ordinate the results, it is essential that some organised scheme and allotment of work should be arranged, and it is suggested that a conference of those concerned

should be held at an early date to formulate such a scheme. Even if to-morrow the whole of the available chemical force set to work on some organised plan, it would not be any too soon to get the necessary information together for the use of the existing works and the new works when they are started.

The urgency of this action is further shown by a resolution passed by an important meeting held in Manchester on February 16, which was presided over by Sir Chas. Macara. The resolution, which was carried unanimously, stated: "That in the opinion of this meeting the Government would do well to organise immediately the present chemical talent in the country with a view to chemical research being undertaken for, and on behalf of, all manufacturers interested, and that the services of these experts should be available for all desirous of availing themselves thereof."

The adoption of such a plan for bringing the educational institutions more closely into touch with the industries would in all probability mark the beginning of a new era in which both would benefit. The more intimate association of professors of chemistry with chemical industry would introduce into the works that higher ideal and broader scientific spirit upon which successful research and development depend, whilst the schools would benefit by the great incentive of practical reality.

The Parliamentary Debate.

Since the above was written, the important debate in the House of Commons on Monday, February 22, has advanced the matter another stage. The criticisms offered by various speakers raised few novel points, and the general tone of the debate was, on the whole, favourable to the Government scheme. Several speakers, including Sir Philip Magnus, expressed the opinion that the grant of 100,000*l.* for research work was totally inadequate. Mr. A. Chamberlain and others emphasised the great difficulties the undertaking would have to face on the conclusion of the war, and many speakers acknowledged that the question of the manufacture of dyes was of such a special character as to warrant quite exceptional treatment.

Mr. Runciman, speaking on behalf of the Government, made the interesting announcement that upwards of 400,000*l.* has already been subscribed towards the capital of the new company, and further stated that the signing of the five years' agreement was not an essential condition of subscribing capital, but that priority of supply would be given to those who had given the undertaking. His concluding remarks may be quoted: "I am surprised that anyone should suggest that we have not adequate chemical knowledge in this country. We have sufficient first-class men, but we lack an adequate number of second-class chemists, which we shall not produce if they are only paid 3*l.* a week.

"Even if this were only an emergency scheme the million pounds promised by the Government

would be well spent. A single month of unemployment in the textile trade would mop up more than that of our national money. It is the disadvantage of all practical schemes that they are full of compromises, but no step has been taken without a practical reason."

WALTER M. GARDNER.

ON COLOUR SENSITISED PLATES.¹

II.—THEIR APPLICATIONS. PANCHROMATIC PLATES. TESTING DYES, ETC.

The commercial "ortho-" or "iso-chromatic" plates, which are specially sensitised for green, besides their obvious uses for scientific purposes in which red sensitiveness is not necessary, are of especial use in the photography of coloured objects where an improved result, as compared with an ordinary plate, is desired, rather than a full correction. As the unassisted eye is not a very keen critic of the relative brightnesses of different colours, especially when they are not in juxtaposition, such an improvement is often all that is necessary. The deficient sensitiveness to red causes a pure red to be represented as if it were black. But almost all colours in nature and most artificial colours are not pure, and so far as a red contained any green or white, that is so far as it reflected any other light whatever in addition to the pure red, except pure blue, then the rendering of the red would be improved. But this fact as to most natural colours being mixed is also a disadvantage, for all coloured objects, so far as they reflect any red, will suffer because of the want of red sensitiveness of these plates.

Plates are made specially sensitised to red and called red and yellow sensitive, and practically all that has been said with regard to green sensitised plates, both now and in the previous article, applies to these, only that the deficiency here is green instead of red.

By the use of more than one sensitiser, plates may be sensitised to both green and red, and the early panchromatic plates were of this type. They had three maxima of sensitiveness, one in the blue due to the plate (that is, the silver bromide) not specially sensitised, and one in the green and one in the red due to the two sensitisers. Such plates may be regarded as being as much of an improvement on "orthochromatic" plates as these are on ordinary plates, but the sensitiveness is uneven, and they consequently suffer as already described. By the careful selection and combination of sensitisers this unevenness has been very largely overcome in the panchromatic plates of the present day. Excessive blue sensitiveness of course remains, but this is easily obviated by a pure yellow filter.

The three illustrations (Fig. 2, *a*, *b*, *c*) show the effects of various colours by the use of ordinary, orthochromatic, and panchromatic plates, respectively. The colour filter used with the orthochromatic plate might with advantage have been

¹ Continued from p. 677.