

wheat which is thereby effected. Taking the increased yield of flour at 5.3 per cent., the new regulation will result in only 93 parts of wheat being required instead of 100 in order to yield the same amount of flour and bread as hitherto produced. This is a saving in wheat requirements of 7 per cent. Against this must be placed the loss of offals production. This will be diminished in two ways: first, by the actual milling of less wheat for the same amount of flour, and, secondly, by a less percentage of offals from the quantity of wheat milled. The result will be a diminution of the output of offals by 23 per cent. Their feeding value will also be reduced by the abstraction of the most nutritive portion and its transference to the flour-sack.

It will be observed that the new regulations cover two distinct points: the first is that of length of flour yield; the second is that all the flour is to be straight-run—that is, there is to be only one even quality. It would be quite possible to prescribe the proportion of flour to be extracted and still to permit the miller to subdivide such flour into two or more qualities. If this were done, the whole of the offal would be concentrated in the lower grade. There would thus be a white flour of the present "patents" or "supers" type, and a very dark flour. Possibly there is a fear that the darker flour would be so accentuated in character as to be objectionable. There would, however, be one benefit: as a result of the higher price that could be obtained for the better quality, the lower grade could be sold very much more cheaply, and so the extremely poor would reap an advantage.

This leads us, naturally, to the question of quality of the new straight-run flour. The writer has already had the opportunity of examining and testing samples submitted by various millers. Such flours are not quite so good commercially as the 70 per cent. straight-run flour, but are better than present ordinary household grades. Compared with the latter, the new flour contains the small proportion of included offal, but this is more than balanced by the retention of the whole of the patent flour. Properly milled from sound wheats, this flour should be found suitable for the manufacture of all forms of bread and cakes, and also for general home-cooking requirements.

The question is being asked: But if 70 per cent. can be increased to 75 per cent., why not an 80 per cent., or even an 85 per cent. flour? In reply it may be well to put on record the reasons why both the makers and users of flour have gravitated to adoption of the whiter sorts. The miller finds that the freer a flour is from offal, the better it keeps. This especially holds with regard to germ, which very quickly causes deterioration in the flour. Then both the germ and the offal are powerfully diastatic in character, and flours in which they are present tend to make a much more sodden and clammy loaf than does a white flour. But a yet more serious objection is the greater bacteriological impurity of the darker flour. Acidity develops during fermentation to a much greater

extent in dark than in white flours; in consequence the darker flour is much more liable to produce sour bread. Again, such organisms as *B. coli communis* are frequently present on wheat, with the result in milling that they are absent from the highest-grade flour, present in small quantity in that of medium grade, and abundant in whole-meal.

The general consensus of scientific opinion goes to show that the bread from white flour is superior in nutritive value to that from the darker kinds. This is vouched for by physicians such as the late Sir Lauder Brunton, and such physiological investigators as Rubner of Munich, Snyder of Minnesota, and Hutchison of the London Hospital. The general demand of the public is for white bread, and Hutchison sums up most pertinently the great importance which must be attached to its decision on problems of nutrition:—"In the last resort, therefore, we are driven for guidance to the results yielded by actual analysis of the diets selected by healthy persons. The value of such results must not be underestimated. Men have found out by long experience what is the best diet, better, perhaps, than science can tell them."

For these reasons any further step in the direction of an additional increase in the flour to be extracted from wheat, and consequently darker bread, should not be taken unless from absolute necessity. The resultant flour would be less nutritious, darker in colour, and more difficult to bake into a sound and satisfactory loaf. It would be less attractive and appetising; and in proportion as bread forms the principal article of diet the change would be the more keenly felt. The poorest classes would therefore be the most adversely affected of the whole of the community.

WILLIAM JAGO.

#### SCIENCE AND THE CIVIL SERVICE.

THE Lords Commissioners of his Majesty's Treasury have appointed a Committee to consider and report upon the existing scheme of examination for Class I. of the Home Civil Service. The terms of reference are:—

To submit for the consideration of the Lords Commissioners of his Majesty's Treasury a revised scheme such as they may judge to be best adapted for the selection of the type of officer required for that class of the Civil Service, and at the same time most advantageous to the higher education of this country; and, in framing such a scheme, to take into account, so far as possible, the various other purposes which the scheme in question has hitherto served, and to consult the India Office, the Foreign Office, and the Colonial Office as to their requirements, in so far as they differ from those of the Home Civil Service.

The members of the Committee are as follows:—

Mr. Stanley Leathes, C.B., First Civil Service Commissioner (chairman).

Sir Alfred Ewing, K.C.B., F.R.S., Vice-Chancellor of the University of Edinburgh.

Sir Henry A. Miers, F.R.S., Vice-Chancellor of the University of Manchester.

Mr. H. A. L. Fisher, Vice-Chancellor of the University of Sheffield.

Prof. W. G. Adams, Gladstone Professor of Political Theory and Institutions in the University of Oxford.

The secretary to the Committee is Mr. D. B. Mair, Civil Service Commission, Burlington Gardens, W.

The Royal Commission on the Civil Service recommended in 1914 the appointment of a committee of this kind to ascertain whether there is any substantial foundation for the view that the scheme of examination for Class I. clerkships unduly favours the curricula of the older universities and handicaps those of the newer. It was suggested that, should it be found that any change is desirable, the Committee, while maintaining the high standard necessary for the examination, should revise and rearrange the syllabus, weighing the educational value of classical learning against those of modern and scientific studies. It will be remembered that the need for change in the present system of allocating marks, by which a premium is placed upon knowledge of the Greek and Latin languages and literature, was one of the main subjects brought forward at the meeting on "The Neglect of Science" held in May last (see NATURE, May 11, p. 230).

In connection with this matter, particular interest attaches to the appeal recently addressed by the Institution of German Engineers to the Chancellor, Herr von Bethmann-Hollweg, a translation of which was published in the *Times Educational Supplement* of November 23. The appeal, which urged that steps should be taken to extend the avenues of admission to the higher posts in the German Civil Service, with especial regard to graduates completing their courses of study at the technical high schools, will be read with deep interest and not without surprise. Having regard to the important part which science in its various applications has played in the manufacturing and economic development of Germany, it might have been expected that its claims to due recognition as an essential factor in the equipment of men destined for high administrative posts in the Civil Service would long ago have been fully admitted. The many and new problems evolved by the war have demanded the services of the best intellects in various departments of life, and, in the opinion of the Institution of German Engineers, made manifest that much more than a merely legal or classical training is essential to the effective staffing of the service. It is admitted by the German Government that "the training of the higher Civil Service does not correspond with the requirements of the day," but such is the force of tradition that, despite years of debate and agitation, the reform is yet to seek alike in Germany and with us.

It is obviously not a matter of importance to us in this country whether or not the German Civil Service is thrown open to duly qualified scientific men, but it is interesting to note that a nation,

whose advent to the front rank of industry and commerce is due almost entirely to its devotion to science in its various economic aspects and to the encouragement given to research and to the establishment of schools of high rank for this purpose, should shut out from its highest administrative posts the very men best calculated by their training to enhance the position it has gained. It is not only in industry and commerce, but in every department of civil life, that science is playing an increasingly important part in the well-being of the community, and therefore demands the trained scientific mind in the administrator and the knowledge and sympathy essential to the successful treatment required for the right solution of the complex problems of our time, both domestic and imperial. If it be true that Germany suffers so much from this want of recognition of her ablest intellects devoted to science and its applications, how much more must it be true of us with far greater responsibilities and where our higher Civil Service has for generations been recruited almost exclusively from a few public schools through the classical and mathematical sides of the ancient universities with which they are associated.

#### POSSIBLE POTASSIC FERTILISERS.

IN view of the present serious shortage of potassic fertilisers, great efforts are being made to find new sources of supply. A possible source has been indicated by Sir Thomas Mackenzie in a recent issue of the *Times*. It appears that South Island, New Zealand, possesses extensive deposits of a mica schist containing on an average 3 per cent. of potash; the material is soft—indeed, it is said to be the easiest mineral to mine in the whole world. Over great areas it lies on the surface and simply has to be picked up, while when it requires to be blasted it shatters so easily that a single charge will blow out tons at once. When brought to the mill it grinds down very easily; indeed, much of it is already broken up and already lies in a state of powder. Mr. Aston, the chemist to the New Zealand Department of Agriculture, writes enthusiastically about the deposit, stating that at Otago alone there are literally millions of tons of pure potash to the square mile; while Mr. A. D. Bell, another New Zealand chemist, goes so far as to say that these new deposits may reduce the famous Stassfurt mines, on which the world entirely depends at present, to the relative importance of a "bottle of potash on a druggist's shelf." This view, however, is controverted by Prof. Wyndham Dunstan, who states that there is not in view any deposit of potash in any country of the Empire comparable in nature, extent, or value with those of Stassfurt.

Agriculturists will want to know what is the fertilising value of the new deposit, as they have learned by experience that chemical analysis sometimes overrates minerals as fertilisers. The ordinary potassic fertilisers are the sulphate, which is very soluble and available, and contains