

tion is to give the workers a share in the management of the business and in its yield. But as regards small farms, the impossibility of such procedure needs no special emphasis, and even in large farms such coöperation is out of the question. Should such powers be conferred upon the workers' committees endless disputes would arise.

Matters are, however, otherwise with the participation of the workers in the yield of the business, for that would give the worker a lively interest in the agricultural price policy and all those matters of agrarian policy bound up with it. The agricultural laborer's share in the profits, whether in the shape of a participation in the net or gross profits, is bound to play an important rôle in future. It is, however, difficult to see how this question, which is closely connected with wage-scale agreements, will develop. Systematic intervention by the State must be avoided in view of the peculiar and varied nature of the industry, and the settlement of the question must be left to the trade organization. It is a matter for discussion whether land used for agriculture and agricultural concerns could be socialized, *i.e.*, handed over into the hands of the State or the community without prejudice to the general welfare and the people's food supply. The land must, in any such discussion, be separated from actual agricultural operations, for agriculture can be carried on with equal success no matter whether the farmer or the State is owner of the land. The deciding factor is the security of the farmer's tenure, and private ownership is the best security for permanent tenure. There are other forms of tenure, *e.g.*, leases, etc., but it is certain that the possibility of the yield of land suffers when the land often changes hands either by sale or transference of the lease. The question

of transferring agricultural holdings into the hands of the community is not so much one of the socialization of agriculture as of State or Communal finance, *i.e.*, a question in which form agricultural property contributes most to the State.

The transference of an agricultural concern, especially of the means of carrying it on, *e.g.*, machinery, implements, livestock, seed fertilizers, etc., to the hands of the community is a monstrous idea. All socialization is an increase of bureaucracy, and that in the case of agriculture is particularly objectionable because it is opposed to its innate characteristics. Agriculture cannot be carried on by a committee; it demands an intimate knowledge of the peculiarities of the land and of the climate and a suitable division of labor. Unless the manager of a farm possesses initiative and a personal interest in the farm, it will never be carried on successfully to the benefit of the national economic system.

In the interest of the return of ordered conditions in agriculture and the security of the national food supply bound up with it, the Imperial Government ought to inform the public what it understands by the socialization of agriculture and to what extent it means to carry out its ideas. On the other hand, it is equally desirable that agriculturists should examine the question of socialization in all seriousness and with open minds in order that light may soon be thrown upon a difficult subject.

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## BRITISH IRON-ORE RESOURCES

BY H. LOUIS

ONE of the most marked effects of the war has been the stimulus that it has given to the development of the

mineral resources of the British Empire, and particularly of those of Great Britain. For many reasons the more active exploitation of our home iron ores has been one of the most prominent features of this movement. Up to the invention of the Bessemer process the iron industry of this country depended practically exclusively upon domestic ores, the bulk of the ores smelted being the claybands and blackbands of the Coal Measures; in addition to these the red hæmatites of the Mountain Limestone of the West Coast and some of the Jurassic ironstones were also worked, but up to about 1870 the iron-ore deposits of the Palæozoic rocks formed the mainstay of our British iron industry. When the Bessemer process introduced mild steel as an important factor in the industry, the relatively small production of West Coast hæmatite no longer sufficed for our needs, and as many of our centres of iron smelting are situated within easy access of the coast, Bessemer ores were naturally looked for abroad, and an energetic importation of foreign ores ensued. Bilbao ore was first imported about 1870, and by 1878, after the Carlist War, this importation had reached 850,000 tons; in 1913 the importation from Spain, to which Almeria and other parts of Spain contributed as well as Bilbao, was 4,500,000 tons, while our total imports from abroad, by far the greater part of which was Bessemer ore, amounted to about 7,500,000 tons. The domestic ore production was 16,000,000 tons, of which about 12,000,000 tons came from the Jurassic ironstones. The growth in the output of these last-named ores was due in large measure to the increasing adoption of the basic process of steel-making. When the war rendered the importation of foreign ores difficult and expensive, our iron and steel industry had to rely more and

more upon basic steel produced from the latter class of ore. This development has been favored by the grudging recognition that for most purposes basic steel properly made is as good as acid, and, furthermore, by the abandonment by the Board of Agriculture of the so-called citric acid test for basic slag in favor of its valuation by the total phosphoric acid present; this means that, whereas, under the former 'made in Germany' test thousands of tons of British basic slag had to be dumped out at sea as unsalable, such slag can now be utilized and its phosphoric acid contents rendered available for the British agriculturist. At the same time, the British steel trade now has a market opened up for what was before a waste product.

One of the signs of the increasing interest taken in domestic ores is the attention that is being devoted to the study of our iron-ore resources. Apart from some earlier descriptions of British iron ores, which have to-day at most only an historical interest, the first attempt at a real estimate of our iron-ore resources was that published by the present writer in the important treatise issued by the Eleventh International Geological Congress at Stockholm in 1910. This showed for the first time the magnitude of Britain's iron-ore reserves, and attracted much attention on the Continent; it would be interesting to speculate how far it may have contributed toward Germany's intention to bring about the war, one of the main motives of which was Germany's desire to obtain possession of the French iron-ore fields and thus to outstrip all competition by commanding far the largest iron-ore supplies of Europe. The principal value of the above-named estimate to-day lies in the fact that it has formed the basis of newer and more accurate estimates. Since the beginning of the

war three important contributions to our knowledge of our own iron-ore resources have appeared, each under the auspices of a government department — it need scarcely be added, having regard to our characteristic British methods, a different department in each case, working independently of the others. Nothing could be more eloquent of the need for a central administration, coördinating such efforts and avoiding useless duplication of work. The first was the now well-known report on the resources and production of iron ores, etc., by Mr. G. C. Lloyd, issued by the Department of Scientific and Industrial Research, which appeared in May, 1917, a second revised and enlarged edition being issued toward the end of the same year.

In the spring of this year an important paper was read by Dr. F. H. Hatch before the Iron and Steel Institute by permission of the Controller of Iron and Steel Production, Ministry of Munitions, the data for this having been collected by Dr. Hatch working for that Ministry. It deals with the Jurassic ironstones of the United Kingdom, and, as has already been shown, these constitute by far the most important of the British iron resources from the economic point of view. The deposits dealt with comprise the Northamptonshire, Cleveland, Leicestershire, Oxfordshire, Lincolnshire, and Raasay ironstones, and full descriptions are given of their geology, mode of occurrence, and chemical composition, the numerous tables of analyses being particularly valuable. Finally, Dr. A. Strahan, Director of the Geological Survey, has recently issued his annual report, in which he presents very interesting estimates of the quantity of iron ore that may fairly be assumed to exist in the various deposits. This is a summary of an extensive series of in-

vestigations upon British iron-ore deposits which the Geological Survey has been recently conducting, the detailed reports upon which are being awaited with much interest. It constitutes a portion of the very valuable *Special Reports on the Mineral Resources of Great Britain* the first volume of which was issued in November, 1915; in the introduction to this volume Dr. Strahan has set out clearly the object of these reports and their economic significance.

The present report summarizes as follows the iron-ore resources of Great Britain under two heads: (a) reserves more or less developed, and (b) probable additional reserves. The figures are:

	(a) Tons	(b) Tons
Hæmatites, etc.....	42,500,000	75,000,000
Mesozoic ores.....	1,775,052,160	2,104,886,000
Clay-ironstones and blackbands .....	1,065,637,000	6,248,475,600

Dr. Strahan says that the estimates are 'framed in a cautious spirit,' and this statement may readily be accepted. Indeed, as regards the last class, the figures are palpably underestimated; thus the probable additional reserves are given as about 6,250,000,000 tons, of which four fifths are credited to South Wales and Monmouthshire, the coalfield which Dr. Strahan probably knows best. There is no reason to suppose that the other British coalfields fall so far short of South Wales in iron contents as collectively to contribute only one fifth of the whole, and in some cases the figures are clearly wrong. For instance, for the whole of the great northern coalfield he gives only 1,500,000 tons, apparently taking the Redesdale area alone, while Durham is not even mentioned. Yet such ironstones were worked extensively at Shotley Bridge and other places in the Derwent Valley, as well as at Waldrige Fell, Uppeth, Birtley, Tow Law, and other

points in the county of Durham, while in Northumberland they were worked at Wylam and Lemington in the extreme south of the county, and at places so far apart as Haltwhistle, Hareshaw, Redesdale, and Brinkburn. There is no evidence whatever that the ironstone was worked out at any of these places, but quite the contrary, and there is at least a probability that it underlies the entire coalfield, though whether it will ever prove to be workable is another question; Dr. Strahan, however, points out that he is 'concerned only with the quantities that exist,' quite apart from their workability. It must, indeed, be admitted that this part of the question is one of scientific rather than of economic interest, and in any case the full reports are not yet available, though it is to be hoped that they soon will be. All contributions to our knowledge of our own mineral resources are of the greatest value to the nation at the present time.

Nature

## GREAT BRITAIN AND THE DRINK PROBLEM

Two books which have recently appeared come as an important and a timely contribution to reconstruction studies. The transitional period is proving already, as it must, a time of vexation and even hardship. In the irksome drudgery of detail, in the searching tests of individual sincerity which accompany the first advances toward the new order, we risk losing the fine imaginative spirit of yesterday. We risk losing the promise and the achievement of war together. The danger is nowhere more evident than in the drink question, itself the key-problem of reconstruction. The first constructive step in its solution has yet to be taken. Meanwhile a policy of relapse by way of piecemeal changes is

haltingly pursued. It is the business of every thinking man or woman to escape from the confusion in which this lack of principle is plunging the prospects of settlement. The public must consider for itself, first, what has been actually achieved, and, secondly, how and in what permanent and progressive form those achievements can be realized. In these two aspects the case could not be more fairly presented than in the Rev. Henry Carter's *Control of the Drink Trade*, and Messrs. Rowntree and Sherwell's *State Purchase of the Liquor Trade*.

The new edition of Mr. Carter's book completes to April of this year his account of State treatment of the liquor traffic in war time, and contains much valuable new material. In this accurate and dispassionate record of fact it is important to trace again the steps by which the State, with no purpose of 'reform,' was forced into a policy of control. Action developed as the needs developed. The high-water mark was reached at Carlisle, where, since restriction failed by itself to cope with a critical situation, the State undertook completely the manufacture and sale of drink over a large special area. The success of scientific restriction in regard to conditions and hours of sale, even before the Food Controller imposed restrictions on liquor output, is proved by an unprecedented decrease in drunkenness and in the crimes and diseases associated with alcohol. Space forbids quotation. The statistical results, which Mr. Carter has clearly tabled, admit of only one opinion on the efficiency of control in the interests of sobriety, health, and efficiency. By contrast, it is worth remarking that the Food Controller's 'concessions' this year have been immediately reflected by a rise of over 35 per cent in the convictions for drunkenness.

The past four years have supplied