

staff and labor) involved, at a price to cover the whole output; such price to include upkeep of plant, stocks, etc. Efficiency in operation would then result in shorter hours, and would itself be cumulative.

If such a policy can be combined with a large decentralization of initiative, high rates of production would follow naturally, and the individual, for the first time, would begin to reap the solid benefits of the use of mechanism. On this basis it would be possible to attack the second urgent necessity, the reduction of money in any form whatever to the status of an absolute medium of exchange.

These are not light tasks, but the alternative to their assumption is a weary pilgrimage which may have some very lurid passages. And in the end it may be found that the chief crime of the capitalist was that he was such a very bad capitalist; in that he neither recognized his assets, nor met his liabilities.

The English Review

THE FUTURE OF GERMAN CHEMICALS

GERMAN chemical and dye works are being rapidly readapted for the manufacture of peaceable products, and the future is regarded as by no means unpromising. Manufacturers realize that they will not be able for some time to come, to export 70 to 75 percent of their total output, but they are already resuming the production of dyes from coal tar, and the manufacture of pharmaceutical products has been carried on at full pressure throughout the war. The *Frankfurter Zeitung* points out that there is an imperative demand everywhere for German pharmaceutical products which can quickly be met, while the stocks of dyes are greatly

reduced both in Germany and the rest of the world. Manufacturers intend, according to the *Frankfurter Zeitung*, to direct all their efforts towards supplying this demand and then towards accumulating stocks, and they hope that soon the excellence of German products will open doors now closed to them. Also they rely on the fact that foreign competitors will be unable to satisfy all the needs of foreign markets, so that recourse must be had to German products.

The efforts of nations which hitherto have been our adversaries [the *Frankfurter Zeitung* continues], especially of the United States and England, to create a chemical industry of their own on a large scale, particularly for the manufacture of dyes, are by no means underestimated in Germany, and it is known that considerable success has attended them, more in the United States than in England and France. It is nevertheless believed that there is no reason at present, to attach serious importance to these foreign efforts, because German industry has the benefit of long experience which, especially in the production of dyes, places it at a great advantage. It is true that Germany may feel the competition in the simpler dye products, which are manufactured in bulk, but she will not feel it in the more complicated products that are the specialty of German industry. The circumstance may be noted, however, that during the war the Swiss chemical industry has made great advances in the manufacture of these complicated products, and has succeeded in obtaining an entry into markets where German industry hitherto held uncontested sway.

The Morning Post

POTASH AND FOOD

It is a favorite dirge with certain of our Jeremiahs to bewail the approaching extinction of the human race by starvation. Malthus, with his dismal visions of starving millions, has probably been misunderstood, but one of our greatest scientists has not hesitated

definitely to inform us that 'the years of plenty are passing: civilized nations will soon be in deadly peril of not having enough to eat'; and this without any reference whatever to war-time conditions, but merely owing to the inevitable encroachment of population on the means of subsistence. Between the starvation alarmists, on the one hand, and the declining birth-rate alarmists on the other, the man in the street is a little bewildered. But why 'civilized' nations? One would have thought that the uncivilized and improvident races of the earth would have been the first to feel the pinch. One can conjure up some horrible pictures, ending with the hungry populace eating the food controller.

In the great days of her pride and prosperity Germany arrogantly informed the world, through Professor Ostwald, that, owing to her monopoly of potash supplies, it rested entirely with her to decide whether or not mankind should starve. At this moment Germany herself is crying to the United States for bread. The vain rodomontade of the professor has changed into the wailing of the politician. And even if she were not going to lose Alsace-Lorraine, Germany would in any case lose her potash monopoly.

Many years before the war Americans had an interest in the Stassfurt potash deposits, but they were harshly treated by the Germans,* and compelled to join the monopolists, with the result that America then and there determined to seek her own home supplies of potash. The United States Geological Survey and the Bureau of Soils were granted funds, and their investigations, even up to 1914, had proved of considerable value, and were the embryonic beginnings of what will probably

* The German Kali Syndicate indeed sticks at nothing. When the extensive potash deposits were discovered near Barcelona, it did everything possible to acquire control, and endeavored to block the French and Belgian interests in every way.

prove to be a great American potash industry. Wonderful progress has been made since 1914, and now we have Senator Lane declaring, with perhaps not unjustifiable optimism, that within two years America will be independent of outside sources of potash. What this means may be gathered from the fact that her pre-war requirements amounted to over 1,000,000 tons, nearly all of which was imported. The question of an adequate potash supply, especially in America, is, of course, a vital one, and of far-reaching economic importance, for we shall have to look to that country, at all events in the immediate future, for large supplies of food and raw material; and these in turn will largely depend on sufficient supplies of fertilizer, especially potash, for the American wheat and cotton fields.

One of the first sources of potash to be investigated in America was the vast deposit of kelp along the Pacific coast from Mexico to Alaska. Kelp was burnt along the coasts of Scotland hundreds of years ago for the sake of the manurial value of the ash. In America the kelp, after being collected by large power-driven harvesters, was at first merely dried or incinerated and ground to powder; but subsequently it was decided to attempt the production of other valuable chemicals, with potash relegated to the position of a by-product. For instance, the Hercules Powder Company at San Diego, California, has erected a large plant where the kelp is not dried, but fermented, yielding not only potash, but acetone, iodine, and other products, including algin, which it is hoped may also ultimately become commercially valuable.

Another source of potash in the United States of America is found in the flue gases of blast furnaces and the dust of cement kilns. This involves a highly

technical operation, and is chiefly carried out by means of an apparatus known as the Cottrell electrical precipitator, in which the potash is separated out and collected by electrostatic precipitation. Many iron ores, especially those of Alabama, contain potash up to about 3 per cent, most of which is recoverable. It has even been asserted that if all the blast furnaces in the United States installed this process, over 1,000,000 tons of potash could be obtained from this source alone. In regard to cement works, where the potash is also collected by means of the Cottrell process, the Bureau of Soils has come to the conclusion, from investigations carried out, that the cement kilns could, in the aggregate, yield about 100,000 tons of potash per annum. In one case, that of the Riverside Portland Cement Co., the Cottrell process has been installed since 1913, and has proved a very good investment, for the potash obtained has practically paid for the cost of the recovery plant. The same process has been working in this country for some time past with very satisfactory results from the potash point of view.

The third source of potash examined in America, namely, salt lakes, is of particular interest. One of these extraordinary 'lakes'—Searles Lake, in California—consists of a vast mass of salt crystals about 12 square miles in area and 70 feet deep, all the water having evaporated. According to a bulletin issued by the United States Geological Survey, the main central salt deposit is a firm and extremely porous bed of salt crystals; so firm and hard, indeed, that roads are made on it, teams and motor trucks are driven over its surface, and even the concrete foundations of the American Trona Corporation's pump house were laid on the surface. The average potash content is 4 per cent reckoned as potassium chloride. The Trona Corporation is said to be pro-

ducing about 4,500 tons of crude potash salts per month, and by the beginning of 1919 they hope also to turn out about 50 tons of borax per day.

Other sources of potash yielding more or less promising results are the mineral silicates, such as feldspar, sericite, and alunite. A plant for dealing with these has been installed at Marysville, in Southern Utah, by the Mineral Products Corporation, and the output at present is about 600 tons per month of potassium sulphate. It is hoped ultimately to obtain aluminium as well as potash from some of these minerals, some enthusiastic investigators even going so far as to anticipate that this will prove a better source of aluminium than bauxite.

There are therefore several promising sources of potash in the United States of America, so much so that the most recent and best-informed opinion in America agrees that Senator Lane had good ground for his optimistic forecast. It has been objected that most of the potash will be produced in the Far West, remote from consuming centres, but this does not entirely apply to potash obtained from blast furnaces and cement kilns—perhaps the most promising field of all. In any case, they are not so remote as Germany, and the freight charges should not be higher than those from Europe. As a matter of fact, the United States Government is keeping a firm hand over this part of the business, and already Armour and Co., the great meat-packers, have obtained a rebate of about £520 from the Denver and Rio Grande R. R. Co. *et al.*, for overcharge on potassium sulphate consigned from Marysville, Utah, to New Orleans. The case was decided against the railway company by the Inter-State Commerce Commission. The chief competitor to be feared by America is not Europe (Alsace-Lorraine or Spain), but Chili,

where it is hoped to obtain potash from the nitrate fields, and deliver it at a low freightage to the great consuming centres.

Professor Ostwald must be watching all these developments with quite peculiar interest.

The Economist

FACING REALITIES

THE elections are over — and everybody with anything to lose must be heaving a sigh of relief, for the election promises were mounting up at the rate of something more — we feel sure — than seven millions a day. Peace hath her victories no less renowned than war, as the poet says; and the Coalition victory, while it will no doubt be glorious, can hardly fail to be expensive. For the Coalition has proceeded upon the easy principle that nothing should be refused to anybody if votes were likely to result from it. The alternative was to risk the return of a Revolutionary and Confiscatory Party, which might cut the throat of society. The Prime Minister, from this point of view, was a sort of safety razor, which might shave close but would not endanger life. We hope it may be so, but it seems to us that in the present state of the country these promises and pledges are not a means of avoiding but merely of postponing trouble. Sooner or later the nation will have to face the realities of the position. It might be better to face them now in the flush of victory than to beguile the public a little longer with appearances. We would have preferred to see the Prime Minister make quite a different sort of appeal to the electors. He might have said to them: 'I come to you with empty hands. Most of our capital is spent. Our load of debt is enormous. We

retain little but our freedom and our honor. Life is going to be hard for all of us. We have been warming our hands at a conflagration: now that the fire has burned out we must rebuild our house. And we can only do it by resolute self-dénial, by unremitting toil. I can promise you nothing except fidelity to the national interest and the national honor.'

Such an appeal, we believe, would have succeeded, for, as the war proves, the British nation is still made of heroic stuff. But now it remains for the people to find out the truth for themselves, and to realize by hard experience, and not by the guidance of their statesmen, the terrible change in the fortunes of the country which have been wrought by the war. For what are the facts? We are now a debtor country, which means that instead of other nations working for us we must work for other nations. In shipping and in shipbuilding the United States is a new and powerful rival; in cotton Japan has made enormous strides. Our coal industry, our iron industry, our milling industry, our agriculture, and our railways are all subsidized by the State. What the total of these subsidies amounts to we would not venture to say, but it is a staggering sum. Every asset we possess is heavily mortgaged. And many of our industries are so deranged by the war that it will take much time and much capital to bring them again upon a peace foundation. Over and above all these liabilities our workmen have been taught to expect high wages, and the electorate is being confirmed in the idea that there is somewhere a bottomless purse upon which all can draw. There is no such purse; the treasury of a State must obey the same laws as a private fortune. If a nation — just as an individual — spends more than it earns it must in