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ANILINE COLOR INDUSTRY.

LETTER

FROM

THE SECRETARY OF COMMERCE,

TRANSMITTING,

IN RESPONSE TO A SENATE RESOLUTION OF JANUARY 26, 1915, INFORMATION RELATING TO THE SUPPLY OF DYESTUFFS FOR AMERICAN TEXTILE AND OTHER INDUSTRIES.

FEBRUARY 22, 1915.—Referred to the Committee on Finance and ordered to be printed.

DEPARTMENT OF COMMERCE,
OFFICE OF THE SECRETARY,
Washington, February 20, 1915.

The VICE PRESIDENT:

In response to the resolution of the Senate, dated January 26, 1915, reading as follows:

Resolved, That the Secretary of Commerce be, and he is hereby, directed to inform the Senate as fully as possible as to the facts relating to the supply of dyestuffs for American textile and other industries, the sources of such supply, the extent and nature of the supply, the movement of prices, the available materials for the manufacture of such supplies in this country, the possibilities, if any, as to the stoppage of such supply by reason of the existing European war, and any and all such other facts as will bring the existing conditions in the aniline color industry fully to the knowledge of the Senate.

the following is respectfully submitted:

Numerous American industries are closely dependent upon the use of dyestuffs. To the great textile branches they are almost as essential as their supplies of vegetable or animal fibers. The same importance exists in the case of the paint, varnish, and ink trades, the paper industry, the feather and leather trades, and a group of minor industries.

Dependent upon the products of these industries are a host of other branches. All users of textiles, such as manufactures of apparel, carpets, upholstery, etc., the printing trades, automobile and carriage manufacture; in fact, nearly every phase of industrial

activity into which color enters as a component factor, and this includes the great majority of our industries.

The old-time natural dyestuffs, such as indigo, madder, cochineal, orchil, fustic, and a score more, have all disappeared from any extended use by the dyer, with the exception of logwood, which still plays a valued auxiliary role. The same is the case with mineral colors, with some inconsiderable exceptions, such as Prussian blue in silks and iron buff in khaki.

Artificial dyestuffs, derived from coal-tar products, have displaced nearly all rivals, combining qualities of fastness, ease of application, brilliancy, variety of shades, etc., utterly unknown to the former generation of dyers.

The American consumption of artificial dyestuffs has attained an annual value of $15,000,000 and grows steadily.

It is supplied partly by a domestic production valued at about $3,000,000. This apparent domestic production is based chiefly upon the use of foreign materials, half-made or nearly completed color compounds. But a small portion is made from American crude coal-tar compounds.

The great bulk of the artificial-dyestuff supply comes from Europe. The average imports are:

Germany	$7,850,000
Switzerland	910,000
Great Britain and others	370,000
Total	9,130,000

Since August 1, 1914, in consequence of the outbreak of hostilities in Europe, this foreign supply has been interrupted and constantly threatened with nearly complete cessation. Until the present date German makers have been able to supply a considerable proportion of the normal demands of their customers, but not entirely. Some important dyes are totally unobtainable. Prices have mounted from 25 to 50 per cent on such dyestuffs as can be delivered. The imports may cease any day through inability to make shipments on account of maritime dangers, or, what is more probable, through the military necessity of commandeering the available supply of the chief coal-tar crude material, benzol, for use as a motor fuel, or diverting the limited supply of nitric acid, the chief chemical used in color manufacture, to the manufacture of explosives.

The multitude of users of dyestuffs in the United States have been crippled in various ways, forced to change designs or abandon certain products, or to revert to a temporary use of natural dyestuffs, with all the accessory readjustment and revolution in dyeing processes. On every hand there is difficulty in meeting contract specifications and in making definite plans and agreements for the future. The importation of dyewood has quickly increased. It is now four times as great as in normal times. Prices of these dyewoods have mounted. Fustic, for example, has doubled in price.

The four American establishments making artificial dyestuffs have done their best to meet the emergency by enlarging the ordinary output. They have been crippled by the difficulties or impossibility of securing half-manufactured materials from abroad or crude materials at home. Some large consumers of dyestuffs have erected emergency

plants and make the colors they absolutely need, at considerable cost, it is true.

In all this annoyance, loss, and uncertainty the question has become acute, Why do we not have an American coal-tar chemical industry, capable of meeting the Nation's demands, self-contained and independent of foreign control, utilizing our native raw material?

A careful analysis of the situation shows that not only is the American supply and the limited American production of coal-tar dyestuffs completely dominated by the German industry, but that this is the case throughout the world. Even countries such as Great Britain and France, with ample supplies of crude material and highly developed industrial power, are in the same condition as the United States, normally dependent for indispensable color materials required by their leading industrial branches, and undergoing at present much more serious difficulties than our manufacturers, as they are completely cut-off from German supplies.

In 1913 the total consumption of artificial dyestuffs in the world had attained a value of over $92,000,000. Germany furnished 74 per cent of the entire amount and over one-half of the materials needed to make the remainder. The only country, in addition to Germany, manufacturing dyestuffs in any noteworthy manner for the world's markets, is Switzerland. She relies, however, for her crude and half-manufactured materials chiefly upon German sources, and her modest industry is essentially dependent upon the colossus at her door. The dominance of Germany in the dyestuff production and commerce of the entire world is so marked, and inherently of such potential might, that it does not hesitate to make itself felt whenever and wherever an effort is made toward emancipation from its control. The methods used are those often associated with the working of great industrial corporations in various lands, and now effectively checked by legal enactment in the United States. In the case of the German coal-tar chemical industry the field is international and its operations are unchecked by law. Its influence has been felt at once in our own country when efforts to manufacture intermediate compounds or finished dyes threatened in any way the interests of the German production and trade.

The coal-tar chemical industry includes not only the manufacture of dyestuffs, but of a number of valuable medicinal preparations and of various high explosives. It is based upon the use of crude compounds present, to a small extent, in the tar obtained in the destructive distillation of coal in gas works and coke ovens. These 10 crude compounds—benzol, carbolic acid, anthracene, etc.—are separated from some 145 other substances present in tar by fractional distillation. This is the work of the tar distiller. From the 10 crudes nearly 300 more complex compounds, none of them dyes, are produced by highly refined and complicated chemical and mechanical processes, involving in most cases a number of complete chemical transformations. These serve as the materials for the manufacture of about 920 dyestuffs now in current use.

In the case of Germany the domestic supply of "crudes" is amply sufficient. Her color factories make all of the 300 intermediates required for her own industry and a large share of those used in the very restricted production of other lands.

The industry has been chiefly developed by the inventive power of German chemists, combined with a wealth of technical skill and keen business management, scarcely equalled in the history of any other branch of manufacture. The 21 German companies engaged in the dyestuff manufacture have a nominal capacity of over $36,700,000, on which dividends average 22 per cent. Actual profits often reach 50 per cent. The great excesses have been devoted to new construction. It is the most remunerative industry in the Empire, the one most solidly and formidably intrenched, the one of which the nation is most proud as showing the triumph of science applied to industrial purposes, and the one illustrating most strikingly the ability to win and maintain international supremacy in a given field.

In the United States, the supply of coal tar is ample, sufficient to provide in abundance all of the crudes required for the manufacture of the dyestuffs consumed in the country. The amount of valuable by-products not yet recovered in our present coking plants amounts to $75,000,000 annually. With adequate provision to save all the benzol and tar liberated in American coke ovens, enough of the 10 crudes could be secured to more than cover the world's consumption in making artificial dyestuffs.

If a commercial demand is present, American tar works can quickly provide all of the crudes needed, practically as cheaply as in Europe. In the manufacture of intermediates, the production is restricted to four or five compounds, and these cover about one-quarter of the needs of American color works.

Our manufacture of heavy chemicals is well developed, able to rapidly expand, and supply all needed chemicals for the production of intermediates and their transformation into finished dyes.

The four establishments devoted to the production of dyes supply nearly 100 different colors, largely, however, as already stated, by "assembling" nearly finished products of foreign origin. These American firms are bold and enterprising, commanding about $3.000,000 capital, evidently doing the best they can under existing conditions to build up a national industry.

Investigation shows that their advance, beyond certain limits, in the manufacture of either intermediates or finished dyes is persistently checked and prevented by the united action of German producers in underselling. The entire German color industry is so completely organized and accustomed to act as a unit in furthering the general interests at home and abroad, that little success in facing their determined opposition has heretofore been obtained.

The present crisis has evoked deep interest on the part of all concerned, tar distillers, manufacturers of chemicals, manufacturers of dyestuffs, the many users of the same, and American economists in general, as to how the problem can be settled. There is no question but that our coke interests are ready to multiply their recovery plants for the production of benzol and tar if a permanent market is assured. There is no question of the readiness of tar distillers to enlarge their plants for the production of an ample supply of the needed crudes if a continued demand is certain. American chemical works and American manufacturers of dyestuffs are ready to embark capital and experience in building up a distinctly American coal-tar chemical industry, using entirely American crudes and intermediates, provided there is adequate legislative prohibition against both

"dumping" in our markets or unfair restraint of American trade by the arbitrary action of foreign monopoly permitted by foreign law and not as yet forbidden by our own. Domestic makers assert their ability to make at once over 90 per cent of the dyes now consumed in the United States, which are now patent free, and state that the remaining tenth will soon be freed from patent restriction.

There seems to be a consensus of opinion that any rapid development and evolution of the dyestuff branch, on a scale commensurate with the Nation's needs, present and prospective, can be assured only on the basis of an effective law preventing that action toward control of our markets by a foreign monopoly which is now prohibited to a domestic monopoly. Some of the largest manufacturers have personally informed the department that what is needed is not a tariff change, but laws placing a foreign monopoly on the same basis as an American one.

American economists feel that the present crisis offers the most favorable moment to decide upon a policy with regard to this one important industry, whether it is to be firmly rooted in American soil or whether the dependence upon a foreign source is to continue indefinitely. It is pointed out that each year which elapses increases in gometrical ratio the difficulties attendant upon any attempt to create a self-contained American dyestuff industry. Further, it is claimed that it is the only highly organized industry not yet brought on a broad and generous scale within the cycle of American economic activity.

In England and France the textile and other branches have insisted that the national industries must be permanently freed from dependence upon a foreign source for one of the vital needs of the most varied manufactures. Within a fortnight the group of French chemists intrusted with the problem claimed that they have satisfactorily solved all difficulties in the way. During the same period, the necessary steps have been taken in England, where the Government has provided for the organization of a national company to create an independent dyestuff industry and contributes nearly $2,000,000 to its capital, granting at the same time $500,000 for the requisite research laboratory.

A detailed report, of which the above is a summary, will in a few days be submitted to the Senate.

Yours, very truly,

WILLIAM C. REDFIELD,
Secretary.

The VICE PRESIDENT,
Washington, D. C.

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