does not depend on the enemies of the movement. You, chemical engineers, if you act as a body, are independent; you could lend the weight of your professional reputation and technical knowledge to prove to the country that we can overcome the technical obstacles. Ten million people in the United States from mill to clothing merchant are dependent on the textile trades and to show these where their bread and butter lies is your problem. Win their votes and you win this campaign. The opponents of American dyestuff manufacturers never mention tariff or patent-revision—they know such proposals would meet with public approval. The foreign makers' agents simply reiterate: "You *can not* do it."

If you take hold of this subject as a society, show America that we can do it and explain to the other technical organizations in the country how profitable it would be to the United States to develop her coal-tar resources, and through your technical publications and publicity departments obtain the aid of the great American newspaper world, you will certainly succeed in so laying the facts before the American public that the solution we offer will be accepted and appreciated. Home manufacture of dyestuffs is the only solution.

Since a carpenter's union and an iron worker's organization have brains enough to work together for their common good, why could not chemists and civil engineers, even the botanist and the astrologer, possess acumen enough to take united action? Technical workers are the one great intelligent force of civilization, although they hardly seem to understand their strength. In such a campaign as this they could use their strength.

If we do arouse the all powerful public sentiment of the American people, compelling needed legislation at Washington, there will result increased chemical activity not only in dyestuffs, but in all other branches of those numberless industries which are based upon the work of chemists. Your profession will rise to higher and unattained heights in the estimation of the country; financial recompense will similarly multiply as the call for your service increases and future generations will, due to your efforts, worthily call this early twentieth century the "Dawn of American Chemistry."

COAL TAR COLORS OF AMERICA

By I. F. STONE

MR. CHAIRMAN AND GENTLEMEN:

It gives me great pleasure to be able to appear before you this evening, to clear up, if I can, the general skepticism which seems to exist in connection with the manufacture of coal tar dyes in the United States.

DYE INDUSTRY IN THE U. S. FOR 30 YEARS

That there is such an industry in the United States is a fact and has been for over thirty years. That we cannot compare with Germany in magnitude is of course true, and that we shall be able to increase our production in the near future to take over all of the colors now supplied by Germany is also manifestly impossible, but that it is possible to increase the American production very materially is a fact, depending on certain conditions of which I shall speak later. That there has been more or less prejudice against dyes made in America is also true, and these dyes are fully as good as any made in Europe, although it has been a struggle to prove that the latter statement is absolutely true. Even at this late day there are people who would always give the preference to European dyes at the same price and quality, if they had an opportunity to do so, and they are abetted in their belief very naturally by the European representatives.

Only a few days ago, among other letters we have received asking about the manufacture of dyes in this country, was one from a very substantial trade journal which circulates largely among the textile mills. Among other things it says: "No one believes that the American dyestuff manufacturer can com-

pete with the German. The Germans are counted wizards in dyestuff chemistry and I doubt if you could interest a great number of manufacturers in a domestic product at the same price as quoted on exactly the same thing from Germany." After a couple of pages of such argument it finally suggests that we take up the matter of advertising with them to change the sentiment of the buyers, which is very naive to say the least.

But the point is, if a journal with the influence of this one should express such sentiments among its subscribers, how unfair it would be to the American manufacturers of dyes, and it is simply an instance of one of the small things against which we are struggling. On the other hand, in the past few weeks we are encouraged by numerous letters from actual consumers of dyes, among them some of the largest textile mills in the country, complimenting us upon the way we have been handling our products during the present abnormal conditions, and advising us that they would in the future give their preference to American colors whenever we are able to offer them in competition with foreign colors; *i. e.*, when we can supply them with the quantity of colors consumed, which hitherto we have not been able to do by reason of not having a production sufficiently large to take care of all the trade. So life does have its compensations and the American dyestuff industry from now on starts out on an equal footing with the German industry, as far as the good-will of the consumers is concerned. It is therefore only a question of being able to produce a large enough quantity at competitive prices to insure a large proportion of the business of the United States for the American manufacturers.

Barely two months ago a comparatively small percentage of the population of the United States knew anything about aniline dyes or dyestuffs, those who did know something being mainly connected with industries which used these products. Even those who did use them had only a vague idea, as a rule, what they were and their source, except in a general way, that they were made from coal tar and that Europe was the principal source of supply. They were even regarded by a large percentage of the consumers as a mere detail of their business, and were put in among the sundries with such items as oil, soap, and I might almost say paper, string, and such miscellaneous supplies, notwithstanding that it requires the highest order of scientific training to produce these colors and a long experience and knowledge of them in order to sell them successfully. The average dyestuff salesman was received only with tolerance and usually referred to some minor employee for his interview. Suddenly something happened. A great war was declared, and the great source of supply was one of the principal nations involved. Some buyer, more intelligent than the ordinary one, discerned that the stock of dyestuffs would be more or less limited if not entirely cut off under these conditions, and immediately made attempts to secure a good supply for his future wants. The news soon spread among others until there was a general scramble for dyestuffs and men who ordinarily gave the matter very little attention are now looking after it personally, and interviewing and corresponding with the heads of such firms as they think can accommodate them. The newspapers took up the matter and published columns of more or less accurate information as to the situation. The general public was therefore given an idea of what was going on, and now know more of the source and supply of aniline products than they ever knew before.

The unfortunate conditions now prevailing have at least been of some good in demonstrating to our people that they should be as independent as possible of other nations in connection with their supply of such products as are needed in this country, and there is now a general demand that the production of aniline dyes as one item should be immediately developed to such an extent that we may be independent of all other nations.

The serious question now therefore is whether or not such an industry can be developed to such an extent, and this question can be answered only by some extended and more or less superficial explanation of conditions. It is not my intention to put before you a scientific or technical paper on the subject, as most of you are more or less familiar with the general conditions surrounding the manufacture of these products, or at least can easily read up the details. I do wish to give you, however, a practical statement of the facts so that you may see why the industry has not developed in this country as it has in Europe, more particularly in Germany, for other nations are no further advanced than are the United States.

RAW MATERIALS FOR DYES

Aniline is a product of coal tar, that is, coal tar is the primary raw material from which colors are produced, and it was obtained originally in the manufacture of coal gas; but recently the coke ovens used for making hard coke have furnished a large and constantly increasing quantity.

The first distillates are such products as benzole, toluole, xylene, phenol (carbolic acid), naphthalene, anthracene, etc., and these are produced largely in the United States as well as in Germany; benzole, for instance, which is probably the most important of the group, is not only the base for the manufacture of the intermediate products of aniline dyes, but is also used largely as a solvent in place of benzine and gasoline, and in fact, in Europe is largely used as a fuel for automobiles as a substitute for the same products. The prices at which it sells in this country are practically the same as in Europe, as are also the prices of the other distillates first mentioned. Up to now, the supply has kept pace with the demand, and there is no overproduction, but if the manufacture of dyes is to be considerably extended it will then be also necessary to extend the production of benzole which can be done in the course of time by substituting by-product coke ovens for those that do not at present recover their benzole. This, however, hinges on the ability to make a profit on this recovery, so that there is a chance that the price of benzole may increase to some extent.

Another base of importance is naphthalene, which is made largely because there is a great demand for it, the consumption in the United States being upwards of nine or ten million pounds, not alone for the manufacture of dyes but more as a moth preventive. Of the quantity consumed here about one-third is produced in the United States while the balance comes about equally from Germany and England.

It is evident, therefore, that the United States starts out on an even basis with Europe as far as the supply of the first raw materials is concerned, and that the natural resources of this country are available for an increase in the products which are manufactured from this source. So, in the beginning, we are as well placed for raw material here as they are in Germany; in other words, this is not a hot-house industry as some people have claimed, but is a part of the natural resources of the United States.

From these distillates are manufactured what we call intermediate products such as nitro-benzole, aniline oil, aniline salts, toluidine, xylydine, cumidine, benzidine, binitro-benzole, nitro-benzole, sulfo-acids, and a host of others.

INTERMEDIATE PRODUCTS LACKING

It is here that the first check in the economical manufacture of aniline dyes is encountered, for the reason that with one or two exceptions, which I will mention later, none of these intermediate products are manufactured in the United States because up to now there has not been a large enough demand for them to make their manufacture economically possible. On the other hand, Europe—Germany particularly—has so developed the demand for these intermediate products that many plants have been established for their manufacture, most of

them specializing on certain compounds, so that in the aggregate they are all produced on the most economical basis. Up to within recent years, few of the aniline dye manufacturers made these products themselves, but depended largely on the aforementioned so-called specializing factories for their supplies; this is now changing, and some of the large color manufacturers are now making the principal intermediate products themselves, although none of them make everything which they use. It is then very necessary, if the United States is to be independent of Germany, that these intermediate products be manufactured on a large scale in this country, and it is here that we ask the Government to start in with a sufficient protective duty to allow the business to be developed. The present duty of 10 per cent, which was put on only in the last tariff bill, is not really sufficient for the purpose. As the group was duty-free previously, there was no incentive to begin their manufacture here.

ANILINE OIL

One exception which is made here is aniline oil, the manufacture of which was commenced about three years ago. The quantity now produced is about one-quarter and perhaps more of the total consumption of the United States, taking oil and salts as one product. The quality is very satisfactory as compared with the German and English products, and has been used by our own factory in the manufacture of aniline dyes since the beginning; in fact, if it were not being produced in this country at the present time the American dye manufacturers would not be able to continue to run as they would be unable to obtain supplies from Europe. As a result, manufacturers here are able to relieve the scarcity of aniline dyes, and have thus been of great benefit to American consumers. They will be a great factor in this relief as long as these unfortunate war conditions continue, so illustrating the great benefit to the people at large in having this class of products manufactured here, entirely independent of Europe.

Unfortunately, however, the commercial side of the manufacture of aniline oil has not been so satisfactory. In the beginning the manufacturers had no protection in the way of duty and were compelled to compete on an even basis with Europe, which could not be done successfully. They did, however, succeed in securing a duty of 10 per cent under the present tariff, which went into effect in October, 1913, but unfortunately this did not avail them anything in the beginning because the convention which controls the production of aniline oil in Europe immediately reduced their prices 10 per cent to offset our duty, so that we were no better off than before. This is a sample of what is called unfair competition on the part of European firms in their attempt to prevent the increase of the aniline industry in this country, but it could be readily checked if our Government would incorporate in their tariff what is known as the "dumping" clause, which would forbid the importation into and the selling in the United States of any product at a less price than it is sold in the country where it is produced. In spite of this check, however, the American manufacturers will continue the manufacture of oil, hoping that conditions will change in the near future so that they may be able to work at a profit. When this object is attained their plans are then to take up the manufacture of other intermediate products, until everything necessary is finally manufactured here. As a matter of further interest, I might say that our own factory in Buffalo made aniline oil thirty years ago, but we were obliged to give up its manufacture at that time owing to inability to secure benzole, which situation is, however, now changed, as it should be possible to obtain sufficient benzole to continue the manufacture under advantageous conditions.

NITRO-BENZOLE AND CARBOLIC ACID

The other exception to my statement that these intermediate products are not manufactured here is nitro-benzole, known also

as crude oil of myrbane, which is in some demand from outside industries as well as the aniline industry, but not to so large an extent as aniline oil, and which is made here from time to time as conditions warrant; *i. e.*, when it can be made at a profit in competition with Europe.

There is another demand springing up for these intermediate products, which may increase their consumption to such an extent that there will be a large demand entirely outside of the aniline industry, *e. g.*, in the manufacture of smokeless powder and other explosives, the makers of which are now using such products as diphenylamine, tri-nitro-toluole, nitro-benzole, pyridine, nitro-naphthaline, etc. This will finally create a demand which will necessitate their manufacture in this country as a matter of safety, for if the Government depends on explosives made from these materials, it will in self-defense have to create some sort of subsidy or tariff protection, making it possible for their manufacture irrespective of European competition. This is also true of carboic acid, which is a primary coal tar product and which is used in the manufacture of picric acid, and explosives used by the Government. Carboic acid not being manufactured here at present to any extent, is now practically unobtainable from Germany or England since they have placed an embargo on this product.

NUMBER OF DYES MADE IN UNITED STATES

From these so-called intermediate products we then come to the manufacture of the actual aniline dye as sold in commerce, and their number is voluminous and complex. My good friend, Dr. Hesse, for instance, recently stated in a published lecture that there were some nine hundred different manufactured products, most of them as different each from the other as a pair of shoes is from a pair of socks. Of these nine hundred he observed that some seventy-six are now made in this country, but that this number is apparently not sufficient to meet the users' demand, in which statement I am quite ready to agree with him, except that we now make nearly one hundred types, which is more than he gives us credit for making. I will say, however, that of these nine hundred original types a great many are obsolete and probably we could get along quite well with a much less number, but as the one hundred made in America are all live types and those which can be manufactured regularly, you will see we are making really a much larger percentage of the total than is apparent at first glance. I might also venture the statement that with the hundred or so types already manufactured here together with perhaps a few more which we would be prepared to take up on short notice, we would be able to furnish the American consumers perhaps ninety per cent of their color demands (speaking now of types or shades and not of quantity), the other ten per cent, which we could not furnish, being such products as alizarines, indigo and patented specialties requiring large installations which it would take a long time to complete.

It would perhaps be interesting in connection with these colors to give a hasty sketch of their beginning and development into the great chemical industry of Germany, with its investment of millions of dollars and employment of thousands of people.

HISTORY OF DYE INDUSTRY

The first color discovered was mauve, a sort of violet, by Perkin in 1856; then followed magenta and fuchsine in the same year, and a small establishment for the manufacture of the same in England, which was not, however, very successful. In 1862 came the discovery of Soluble or Water Blues, then Hoffman's Violet about 1863, Bismarck Brown in 1863, Naphthol or Martius Yellow in 1864, and the Nigrosines in 1867.

It was about this period that the Germans became actively interested in these products, and commenced their patient, intelligent, and careful researches into the subject, which later

resulted in most wonderful discoveries and the development of this industry in their country.

Then followed the discovery of Orange, Fast Red, Chrysoidine, Malachite Green, Ponceau (Scarlet), Methylene Blue, Eosines, and Metanil Yellow about the years 1875, 1876, 1877 and 1878, and the manufacture then became one of recognized merit and importance.

After 1880 followed in rapid succession the discoveries of Auramine in 1883, Tartrazine in 1884, Benzo Purpurine in 1884, Congo Red in 1885, Benzo Azurine in 1885, Naphthol Black in 1885, Diamine Red in 1886, Rhodamine in 1887, to mention only a few of the best known and most successful colors.

From 1880 to 1890 might be called the golden period of the business. Just prior to that time alizarine had been discovered, red in 1871, blue in 1877, patented, and successfully produced and sold at high prices with correspondingly large profits. It was about that time that our German friends discovered the advantage of securing an exclusive market in the United States through their patents which enables them to sell at high prices here, although continuing the manufacture in Germany. The profits were enormous from such patented products as alizarine, benzo-purpurine, diamine red and other direct dyeing cotton colors, Auramine, Rhodamine, Tartrazine, and other such colors, which were discovered and put on the market in that period, and put the German industry immediately on such a high pinnacle of success that it has continued until the present time.

In the nineties came the discovery of such important products as direct blacks for cotton, and acid and chrome blacks for wool, the total consumption of these blacks being much larger than all the other colors combined.

Also at this same period began the first of the patents on synthetic indigo, of which there are many. It was finally put on the market at a tremendous expenditure, and has been a commercial success only in the past few years, though it has now practically replaced the natural indigo.

I might say in connection with the development of colors, that in the nineties came also the development of such pharmaceutical products as phenacetine, antipyrin, etc., which paid enormous profits to the manufacturers and which were also controlled by patents.

GERMAN INVESTMENTS IN DYE INDUSTRY

Such, then, is the wonderful development of the coal tar industry, there being invested at this time in Germany something like \$400,000,000, probably more, employing some 50,000 people. Some of the factories pay dividends of 25 to 30 per cent, after charging off a third of their profits to sinking funds for the erection of new plants and for other such purposes. This latter has been done for so long a period that most of the present property and plants do not appear on the books at all as assets, but have been built from the surplus profits. This statement is made on the basis of a balance sheet for 1913 issued by one of the great factories, which has a capital of 55,000,000 Marks, but whose stock is selling for over six times par value, showing that the actual capital in the business was at least four times the shares issued, or some 200,000,000 Marks. On a capitalization of 55,000,000 Marks they showed a profit of 25,000,000, or nearly 50 per cent, one-third of which was written off from their real estate and plant account, leaving about 16,000,000 Marks from which they paid a dividend of 28 per cent. Assuming that I am correct in my estimate of some \$400,000,000 being invested in the industry in Germany and assuming that a fair proportion of their production is shipped to the United States, it would mean that if the United States were to develop this industry to take care of all their consumption here, they would need millions of dollars and would need to employ thousands of people, which will give you an idea of the magnitude

of the business that it is now proposed that we establish here to its full extent.

VALUE OF DYES IMPORTED

It might be interesting at this point to give you the value of the aniline products imported into the United States from these European factories, the figures being for 1913: Aniline dyes, about \$7,000,000; indigo, \$1,000,000; alizarines, \$1,500,000; a total of about \$9,500,000, these figures being, however, cost prices. When the American duty of 30 per cent is added on aniline dyes, and further amounts added for expenses and profits on their sale here, it means that the American consumers are really paying something like \$12,000,000 for their supplies, not counting the colors produced in America, which may perhaps reach about \$2,000,000, the production in America being some 15 to 20 per cent of the total consumption. These figures do not include the importation of pharmaceutical products which are made from coal tar and which is in itself a large business.

Our German friends are entitled to all the benefits which have accrued to them by reason of their shrewd, intelligent, and careful attention to this industry, but with such a statement as the above, does it not seem as if they had had enough and that it is now time for the United States to participate in this great industry when they are so well prepared to do so by having as good, if not better, natural resources than has Germany, and being consumers of so large a proportion of the German products? We must admit at once, however, that the United States cannot compete with the German manufacturers under normal conditions, *first*, because they have a great advantage in capital, experience, and the general advantages of everything that goes with a successful and enormous business; and *second*, because the actual expenses of producing in Germany through labor conditions, and so forth, are much less in this country, so that some way must be devised to put the United States on a competing basis. Two things are necessary for this.

NEED OF PROTECTIVE TARIFF

First, a sufficient protective tariff, which does not necessarily mean, by the way, an increased price to consumers, although many people seem to think so. For instance, the *Scientific American* of September 26th falls into this common error: it states that with an average importation of about \$6,000,000 worth of coal tar dyes in the last thirty years we have a total importation of \$180,000,000 during that period, and assumes that had duties been 10 per cent higher it would have meant that a total of \$18,000,000 would have been paid as an insurance premium against the possible event of a war such as is now disturbing commerce. Even if the *Scientific American* were correct in the statement that \$18,000,000 would have been paid as an insurance premium in thirty years, this really would be cheap insurance compared with the enormous value of the colored goods manufactured, assuming that the goods could not have been manufactured without the colors, which is almost the situation as it stands to-day if colors are not soon obtained in the necessary quantities. When I speak of goods in which aniline dyes are used, I mean the whole range including textiles, leather, paper, silk, paints, and the hundred and one other dyed manufactured products.

In my opinion, however, based on experience, just the contrary to the *Scientific American* opinion is true, for the reason that a higher tariff would have stimulated production and competition, and competition always controls the price. This is shown clearly by actual facts; *e. g.*, on indigo and alizarine colors there is no duty, and as a consequence they are not made here. Theoretically, therefore, they should be sold very cheap, but as a matter of fact, by reason of no competition here, they are controlled by conventions in Europe which make a uniform price so that consumers are unquestionably paying more than if such products were made here in competition. On the other

hand, take for instance direct cotton black, an aniline dye which has a protective duty of 30 per cent; it is made in this country in large quantities and the Europeans have been obliged to reduce their selling price in this country to less than that in Europe, so that American consumers are enjoying prices as low as 17 to 18 cents for a color which sells at from 22 cents and upwards in Europe under normal conditions.

Does any one believe that the low prices would have been made in this country were it not for the competition here, and does it not therefore prove that competition here regulates the price and that it is not so much a question of duty? The American manufacturers do not want such a high duty, but they do want enough to equalize the difference in manufacturing conditions between this country and Europe and they want protection against the "unfair competition" referred to in my remarks in connection with aniline oil; in other words, the inclusion of the so-called "dumping" clause, and with a proper tariff on these lines the business could be successfully developed. If we could get our intermediate materials at the prices paid by the Germans, and then secure for our colors the prices obtained by the Germans for finished colors in other countries, plus the actual American duty, the problem would be solved, for this actual American duty, if sufficient, would cover our extra cost of manufacturing and put us in the exact position of the Germans as far as our selling prices are concerned.

NEED OF CHANGE IN PATENT LAWS

Second, our patent laws must be modified, so as to require the manufacture in the United States of all those articles for which U. S. patents are issued. England has within the past few years made such changes in her patent laws, and Germany has always required the manufacture of patented products in her own country. Her present law reads in general that the owner of a patent must work the invention to an adequate extent in Germany or at all events do all that is necessary to secure such working, and if not, then if the public interest is such that the granting of permission to others to use the invention appears needful, that is done by making some arrangement with the owner of the patent so that he receives adequate compensation—but the manufacture of the product itself is insured for Germany. About 1909 a similar clause was threatened in the patent laws of this country, and to head off such action Germany negotiated a treaty with the United States by which the German working clause was made inoperative on American inventions; in other words, in return for the United States allowing Germany to continue to manufacture her products in Germany and export them to the United States, the United States was allowed a similar latitude in exporting her patented products into Germany, but whether or not the financial results of this treaty were beneficial to the United States is a question; it certainly did not work out to the benefit of the United States as far as coal tar products are concerned.

In what I have already termed the golden period of the industry, there was from 1880 to 1883 a duty of 35 per cent *ad valorem* and 50 cents per lb. specific, which gave ample protection to the industry. As a consequence there were nine or ten factories in the United States, and the prospect of becoming independent of other nations for our supply of the aniline products was bright indeed, but the tariff act of July 1, 1883 abolished the specific duty of 50 cents per lb., leaving only the *ad valorem* duty of 35 per cent, and fixed a 20 per cent duty on the intermediate products, which left only a net protection of 15 per cent and immediately checked the industry here. No new factories were started, and within one year after the new tariff took effect five of those already established were forced out of business, leaving only four to continue the work. These four would have gladly followed their example, but as they had invested large sums of money in plants which would be an entire loss if abandoned, they decided to continue to operate their

factories, hoping for more favorable legislation in the future. Thus far they have been bitterly disappointed, and no tariff since that time has given them sufficient protection to develop their business to any large extent. Of course a specific duty of 50 cents in those days was not abnormal as the selling prices of the colors were so much higher than at present, and if a proper duty had been continued it would have had the same beneficial effect, but the abandonment of a sufficient duty has left open the admission of colors on a basis which really gives no protection at all.

In addition to the protective question as a stimulant to the creation of the dye industry in America, if the Government had in the eighties required the manufacture in this country of all products for which they issued patents, then it would have at once created a large industry here, for the European patentees would have been forced to build branch factories in the U. S. These factories would undoubtedly have developed other products even though they had originally been erected only for the manufacture of patented articles, and while this would not have helped the then American factories it would at the same time have inevitably created a large industry with beneficent results to the country at large.

As I have stated, there are now four factories in the United States manufacturing aniline dyes, our own factory having been established in 1879. While of slow development, it has been successful to the extent that it has kept in business and now manufactures practically all of the seventy-six different colors mentioned by Dr. Hesse, or to be correct, the one hundred, to which I referred in the beginning of my remarks, these colors being all of the original colors such as Bismarck Brown, Magenta, Chrysoidine, Fast Red, Water or Soluble Blues, Eosines, Nigrosines, a comprehensive line of direct dyeing cotton colors, and a comprehensive line of acid and chrome colors for wool and silk. The list could easily be extended to the manufacture of practically all of the necessary colors now demanded and not covered by patents, thus giving the consumer a large variety and insuring practical independence of Europe under any conditions. The resulting business would be large, except in comparison with the great German industries, which stand alone in their magnitude.

PRESENT WORK OF AMERICAN PLANTS

All of the American factories will continue to manufacture colors to the best of their ability, but they cannot promise any extensive increase in their production without the support of the Government in the line of tariff protection, and incidentally, the change in the patent laws. The latter, however, are not now quite so important as to colors because many of the original patents have expired and we are free to manufacture a large line of colors provided it is made commercially possible for us to do so, we having already demonstrated our ability as far as experience and willingness are concerned. I might mention that our own factory in Buffalo, known as the "Schoellkopf Aniline Works," was the pioneer in the manufacture of such products as nitro-benzole, nitro-toluole, binitro-toluole, binitro-benzole, aniline oil, aniline salts, dimethylaniline, and quite a range of sulfo-acids, some of them of our own invention, which are necessary for the manufacture of both acid and direct colors. We have also made such products as pure carboic acid and pure naphthalene, but were obliged to give them up as well as the others because we could not compete with the European manufacturers; we are now hoping that they can be taken up again either by us or by possible manufacturers of intermediate products and their manufacture continued successfully in this country. Under the present abnormal conditions our factory is again making some of these products in order to keep in operation, since it is not a question of price but of ability to manufacture aniline dyes at almost any cost, such is the demand. But whenever conditions be-

come more normal we shall necessarily have to give up the manufacture of these intermediate products for the same reason that we had to give them up before, *viz.*, that we can purchase them in Europe for less than we can manufacture them here.

I might mention further that our factories in Buffalo are still controlled and directed by Mr. J. F. Schoellkopf, who originally established them, being assisted a little later by his brother, Mr. C. P. Hugo Schoellkopf, so that they have had nearly thirty-five years of continuous experience in the manufacture of aniline products, and are fully competent to continue the manufacture in a large way, should favorable conditions develop.

This paper is not intended to appeal for sympathy or help from the Government or from American consumers because we happen to be so placed for the past few years that we could not develop our business as it might have been developed under different conditions, and the American factories even as they are, are prosperous and quite able to take care of themselves up to a certain point; but it is intended to show that the business cannot be extended to large proportions for the protection of American consumers, except with Government help as to tariff and patent laws, and with the assistance of the consumers themselves, which means giving the American manufacturers the preference wherever possible and assisting them to secure the necessary help from the Government.

Here then is a superficial history of the progress of the aniline industry from its inception to the present time, not only in this country but in Europe, and the situation as related to the present and future manufacture of these products in the United States is fully explained. Will the United States Government continue its indifferent policy of practically allowing this important industry to drift along as heretofore, or will it now wake up and seize the opportunity to make itself independent of all other nations in its supply of coal tar products not only for aniline dyes for commercial purposes, but for pharmaceutical products, which relieve illness and pertain to the health of its inhabitants, and for products for the manufacture of explosives which would be absolutely vital in case of war? The future alone can answer these questions.

ADDENDUM

After reading this paper, in reply to a question as to whether or not any original work had been done by the American dye manufacturers, that is, had they discovered any new products, Mr. Stone stated that sixteen patents had been taken out by the Schoellkopf Works between 1884 and 1903, comprising colors and intermediate products. One of these products, known as Schoellkopf Acid, had been taken up by one of the largest German manufacturers and used extensively by them; another product, Direct Black, had been taken up by another large German factory and also made extensively by them. Both products were used, of course, through arrangements with the Schoellkopf Works.

NEEDS OF THE TEXTILE INDUSTRY

By ALFRED L. LUSTIG

MR. CHAIRMAN, MEMBERS AND GUESTS OF THE AMERICAN CHEMICAL SOCIETY:

I have been asked to say a few words to you on the needs of the textile industry and, as Chairman of the Dyestuff Committee of the National Association of Finishers of Cotton Fabrics, I am glad to have an opportunity to bring our needs to your attention. I would at this point like to state, however, that I am confining my remarks to the situation as it affects the dyer and printer of cotton fabrics (the branch of the industry with which I am most familiar), although I believe that the wool and silk trades are in a condition similar to our own.

As you all know, a very large proportion of the colors used by textile finishers are imported from Europe, mostly from