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HOW WELL OUR CHEMICAL INDUSTRY HAS BEEN MOBILIZED FOR WAR

At an annual meeting of the American Chemical Society last month in Boston one of the sessions was largely devoted to discussion of war-topics by men at the forefront in helping our Government solve its war-time scientific problems. What had been done in this direction in a few months "proved altogether astonishing," according to a correspondent of *The Journal of Commerce*. An eminent French chemist, a guest of the Society, said that American scientists had "accomplished in three months what the European scientists required years to perform." One of the addresses showed reasons for such a statement. It was made by Dr. William H. Nichols. "The chemical industry of the United States is mobilized," said he. "We are in fine shape to take care of any problems that arise regarding war-needs and the supply of the nation. We have been getting ready for this war and its demands for several years and feel confident that we can do much toward winning it with all our science and ability to use." Dr. Nichols followed with statements of the constructive good which had already been accomplished by the chemical engineers and industrial chemists who had been developing new products and substitutes for the many acids, chemicals, and dyestuffs which formerly came in great bulk from Germany. Following are parts of his address:

"Potash is one of the most important subjects to which the chemical committee has given its attention, and already many evidences of practical results are seen, for there is every belief in our minds that the output of potash from various forms of recovery will mean that not only can we supply the needs of the country next year, but that we can hold the manufacture here after the war is ended. The greatest known deposit of potash in the world is awaiting development, and the chemical committee wants it made available for war-supplies at once. It contains over 23,000 acres of the richest known deposit, estimated to be worth more than one billion dollars. Its immediate use depends on Congress.

"Other sources of potash are its derivation or recovery from various by-products, among them being the dust from cement mills, where many thousand tons are reputed to be lost at the present time. Potash, as well as being used in the making of war-supplies, is, of course, highly important in the preparation of fertilizers, and the farmers of the country need all that they can get.

"Toluol is one of the ingredients used in the making of gas, and is also one of the most valuable ingredients used in the manufacture of trinitrotoluol, the basis of the most of the shells stored at the naval bases. The public service commissioners of various States require a certain quality of illuminating gas, and

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even their tests have been changed in order to allow for the manufacture of gas to go on with lesser quantities of toluol. The consumers will have to be satisfied with a slightly poorer quality of gas, until substitutes are found for that ingredient.

"So many are the products that are used in making materials and fertilizers which have become scarce in the open market, that our chemical engineers have been working night and day to discover processes whereby the materials themselves or substitutes for them may be supplied quickly.

"While this war is one of chemistry more than of any other science, it is none the less true that everybody has got to take active part in order to bring it to a successful conclusion. From my observations in Washington I do not believe the people realize that we are engaged in an exceedingly difficult adventure. Not until a full appreciation of this fact is experienced will this country be able to put forward its best endeavors—and the best will be found not to be too good.

"The fixation of atmospheric nitrogen has made it possible for the German nation to carry this war forward [much longer than otherwise would have been the case. The unpreparedness of its antagonists has done the rest.

"While I have every respect for the German chemists I have a higher respect for the American chemists, and I have no doubt whatever but that they will be found equal to the task of conducting this war of chemistry in a manner thoroughly creditable to themselves and the nation."

A writer in the *New York Times* recalls that before the war "more than nine-tenths of the dyestuffs consumed in this country came from Germany, whose manufacturers controlled the world's supply of artificial dyes and the intermediate raw materials used in making them." In this country were only five producing companies, and their output was very small. The dye industry did not attract American capital because "little or no profit could be gained in competition with the low-priced imported colors." When the war began, however, it cut off the supply from Germany, and so there followed a shortage that seriously affected industries in this country employing more than 2,000,000 men.

Since American chemists, capital, and manufacturers came to the rescue, and a great dyestuffs industry was created, until the number of companies has risen from five to more than 100, we are making "what is needed, and more, so far as nearly all the many varieties and shades are concerned." Our exports of dyestuffs in the year immediately preceding the war were \$356,000. Last year they were \$11,700,000. We are, in fact, making as much as we consumed in peace years, and are receiving for exports more than we were then paying for imports from Germany or elsewhere. This industry requires more than 900 distinct chemical products, taken from about 300

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intermediates, and obtained from ten crude materials supplied by the distillation of coal-tar. But "we have succeeded in making ourselves independent in this field."

Of interest in connection with Dr. Nichols's statements is the news, also given in *The Journal of Commerce*, that the authorized capital stock of companies formed in this country during August for the manufacture of drugs, chemicals, and dyes aggregated \$13,101,000, which is the second largest total for any month of the year and has been exceeded only in four months since the beginning of 1915, when the influence of the war began to exert itself in the development of the domestic industry. The August figure compares with \$10,215,000 in July, \$1,775,000 in June, and \$16,375,000 last May. The compilation includes only companies with an authorized capital stock of \$50,000, or greater. In the thirty-two months since January 1, 1915, the total indicated investment in new drug, chemical, and dye companies was \$230,670,000. Of this amount \$65,861,000 was contributed during the first eight months of 1917, which was slightly more than the total authorized capital involved in the formation of similar concerns during 1915, but well below the figure for 1916. It compares with \$60,523,000 during the first eight months of last year. Other items in the *Journal's* statement are these:

"The average monthly indicated investment in drug, chemical, and dye companies during the eight months ended August was \$8,232,600; during 1916, \$8,270,300, and during 1915, \$5,463,700. The development over the period covered by the compilation has been as follows:

Year 1915.....	\$65,565,000
Year 1916.....	99,244,000
Eight months, 1917.....	65,861,000
Total.....	\$230,670,000

"The incorporation of companies for the manufacture or distribution of chemicals, drugs, dyes, etc., compiled according to months, appears as follows:

1915		1915	
January.....	\$1,630,000	July.....	\$4,950,000
February.....	750,000	August.....	3,200,000
March.....	1,925,000	September...	800,000
April.....	1,400,000	October.....	25,525,000
May.....	5,100,000	November...	1,650,000
June.....	8,450,000	December...	10,125,000
Total.....		Total.....	\$65,565,000

1916		1916	
January.....	\$9,525,000	July.....	\$330,000
February.....	37,915,000	August.....	1,375,000
March.....	1,450,000	September...	5,500,000
April.....	2,575,000	October.....	25,905,000
May.....	6,800,000	November...	6,440,000
June.....	553,000	December...	976,000
Total.....		Total.....	\$99,244,000

(Continued)

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January.....	\$3,550,000
February.....	3,900,000
March.....	11,850,000
April.....	5,095,000
May.....	16,375,000
June.....	1,775,000
July.....	10,215,000
August.....	13,101,000

Grand total..... \$230,670,000

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