DELEGATES OF THE FIFTIETH MEETING OF THE AMERICAN CHEMICAL SOCIETY AT TULANE UNIVERSITY, NEW ORLEANS

serve the highest praise for the skillful and efficient manner in which they handled the details of the convention as well as for the many unique and enjoyable features which they added to the purely scientific and business program of the Fiftieth Meeting of our Society.

PRESIDENT'S ADDRESS

By CHARLES HOLMES HERTY

It is my pleasant duty, in behalf of the members of the American Chemical Society, to express our grateful appreciation of the cordial words of welcome so generously spoken by the people of New Orleans through Mayor Behrman, and by the members of Tulane University through President Sharp.

So hearty and so evidently sincere is this greeting that no other assurance could be required than the gracious words of the speakers. Yet another proof does exist. Ten years ago this Society met in New Orleans and the memories of that delightful week are still keenly alive in the hearts of all who were present at that meeting. It was not a matter of surprise, therefore, that the invitation to meet here again was gladly accepted.

But as I think of the tremendous changes which have taken place in the South during the intervening decade I cannot help but feel that the acceptance of the invitation was prompted also by a desire to get into sympathetic touch with that new spirit whose throbbing can be felt throughout our beloved southland today.

That spirit is not yet entirely freed from the shackles of ultra-conservatism and long-accustomedness, but the thought of the nearness of the day of its full emancipation tempts me beyond resistance to quit the rôle of responding guest and to join with you of New Orleans in welcoming to our midst this group of men whose presence has always proved an incalculable blessing.

Ours is a land lavishly blessed with natural resources—theirs the hands which take these products under closest scrutiny and by patient and laborious research shape them into greater blessings for humanity.

Of what value were the wonderful deep-seated sulfur deposits of this state until the dogged persistence of a Frasch brought this golden material to the surface by an ingenious application of the bread-maker's art, and thereby changed completely the sulfur market of the world. Are we to rest content with supplying this raw material while the methods of changing it into more valuable forms are so well known and are open for use by all?

Again, we fall so easily into the poetic habit of speaking of our "snow-white" fields of cotton, although we well know that when this cotton has been woven into cloth it shows a marked yellow coloration. But the chemist comes to the aid of nature and sets free from its tranquilizing union with sodium that element, chlorine, which gives the perfect bleach, so that a cotton cloth may be made that is pleasing to the eye. Here in your vast deposits of rock salt is stored sufficient chlorine to bleach the cotton crops for years to come. Shall it continue in this idle sleep?

Our esthetic tastes are also exacting; mere white-

ness does not satisfy; variety of color is demanded, and at the outset nature was drawn upon for dyes, successful binding to the cotton cloth being effected by the chemist through the aid of various mordants. Then followed the wonderful development of the coal-tar dye industry, a fascinating chapter in German chemical industry, culminating in the discovery of that group of dyes which need no mordant for attaching themselves firmly to the cotton fiber. In the development of this industry nature has been far surpassed in regard to both shades and durability. So insistent is this demand for colors that many of our laboring class are today threatened with enforced idleness if the artificial dyestuff supply is completely shut off by the complications of the foreign war. Much more will be said upon this subject during this meeting by those far better qualified to speak concerning it.

The chemist brings cotton and nitric acid together and behold a wonderful series of substances, varying from guncotton, that powerful explosive now playing so terrible a rôle in the fate of mankind, through camera and moving picture films to celluloid, to the beautiful artificial silk, and in lighter vein, if you will, to the wigs of straight black hair which have supplanted the anti-kink nostrums so eagerly bought by the more modern of our darker population.

The statutes of Mississippi once imposed a heavy fine for allowing cottonseed to endanger health by its rotting, or for fouling the streams into which it was thrown, but the chemist solved the problem of profitable cottonseed oil manufacture and a new source of wealth was opened to the South. Even today he is changing that oil by a new process into a better lard than ever graced a greasy grunter.

Much use is made of the chemist in this oil industry, but it cannot be considered to be upon a thoroughly rational basis until it pays for its raw product, cottonseed, according to the analytical results as to oil and protein present. Past economic conditions have not justified this, but the present is beginning to show it and the future will surely establish it.

Thanks to the splendid work of Charles M. Hall, the bauxite of my native state, Georgia, finds its way to Niagara Falls for change into the beautiful metal aluminum by the electric current generated there by falling water; yet all around its native home the power of the mountain streams has for centuries been neglected.

Even today shall we rest content with utilizing this power simply for purposes of transportation and illumination while we remain a producer of raw material? This same water power converted into the form of the electric current can set free your chlorine, can make available the nitrogen of the free air for nitric acid, and can isolate your aluminum. Our thoughts for the future development of chemical industries in the South must turn to the better utilization of our now almost neglected water powers.

These are simply types which I have mentioned to you this morning; a host of other illustrations could be given, but I must not go further in this line for the

first paper on our program today, by Mr. A. D. Little, will tell the full story. We are especially glad to welcome Mr. Little into our midst, for he has been strongly drawn to the possibilities of our section and his is the clear eye which sees and the steady hand which can point the way to a truly greater future; for there is waste all around us and the development of our resources has scarcely begun.

I cannot close, however, without registering a plea which is not local or sectional in its character—a plea for closer coöperation between business men and the chemists of our technical laboratories and our educational institutions. Chemistry is no “black art;” the days of magic are past; the methods of research are well known. Patience, time, accumulating experience and good training are sure to bring rich results. The accomplishments of chemists in the past are ample proof of this statement. Why should the pioneer be always subjected to scoffing and to ridicule? Cannot the man of finance distinguish between a chemist and a fakir? The earmarks are plain. Our program today contains affirmative testimony on this point from some of the greatest business men of this country. They have been able to make the distinction, and they have no vested right in that ability. Dr. Hesse will tonight summarize this situation in an address which will clear many matters and give inspiration for new hope.

I confidently believe that such a hope is fully justified. The stimulation of this war period and the awakening of our whole people to the need of closer coöperation warrant the belief that, while the South will always remain a great agricultural section, through the blessings of its fertile soil and splendid climate, there will also be developed here industries undreamed of at present. These will convert our raw material into more and more highly finished products, not for the purpose of mere sordid accumulation of wealth, but to relieve in the masses of our people that pinch of hardship and privation which followed the close of our civil war and which for many years has made the struggle for existence paramount to all else. Is there reason for aught but optimism? Is not the air vibrant with the conviction that a new day is dawning for the South?

What part are we of the South to play in that development? The great discoveries we now make use of are not the products of southern brains. Frasch of Germany developed our sulfur, Hall of Ohio our aluminum, Gayley of Pennsylvania increased the output of our blast furnaces by his dry-air blast, de Chardonnet of France gave us artificial silk, Mercer of England our mercerized cotton, Sabatier of France the reaction by which our cottonseed oil is hardened, Germany the great bulk of our dyestuffs.

What can our young men do? For those whose tastes lead them to chemistry as a profession, I would urge a more thorough training in the methods of research, which can be obtained in our universities. I know that this necessitates a postponement for several years of entrance into active business life, and requires an extra expenditure of funds which many of our

brightest young men do not possess. Here lies the responsibility of our wealthier people—to aid by giving full educational advantages to young men of this type and further to see that their own sons realize and appreciate the great part they may play in this development if properly equipped. Love of country, section, and state, which mean sympathy and acquaintance with those among whom we are to work, constitute a most valuable advantage in the struggle for success when it forms the broad foundation on which is laid a thorough educational training.

Can our young men afford to sit idly by and not do their share in this great development now at hand? My faith in their courage and ability, when once aroused, is unwavering.

CHAPEL HILL, NORTH CAROLINA

THE INDUSTRIAL RESOURCES AND OPPORTUNITIES OF THE SOUTH¹

By ARTHUR D. LITTLE

Only those who have stood upon the seashore and there endeavored conscientiously to place the Atlantic Ocean inside a quart bottle by the aid of a teaspoon will appreciate the temerity and difficulties involved in an attempt to present within the compass of a brief address the industrial potentialities of the South. Probably no one but a relative stranger to the South would make the attempt at all. Nevertheless we are all prone to overlook the obvious in our immediate surroundings, and the visitor who looks upon them from a different standpoint with sympathetic interest and keen appreciation may sometimes point out new aspects in them and values before unrecognized. The man who views a mountain range from a distance may even trace its outlines and sense its trend better than those who dwell upon its slopes. So it happens that one whose knowledge of the South is in no way comparable to your own may hope, through your indulgence, to enlist your interest and possibly to turn your thought in new directions.

The awful spectacle of a world in arms which we are forced to contemplate today must recall with a peculiar vividness to many men and women North and South the horrors and desolation of another struggle which was concluded, happily as we all now believe, just fifty years ago. When we consider that the wealth of the whole United States in 1850 was estimated at a little more than \$7,000,000,000, and the cost of the war to the South has been conservatively figured at \$4,000,000,000, we may gain some faint notion of the material burden under which the South slowly arose to work out her destiny.

The situation she then faced was one to daunt the stoutest hearts. It involved a reorganization of the whole economic and social structure in a land mourning the loss of the flower of its youth and manhood, with broken credit, capital destroyed, industry prostrate, and streams of immigration diverted. To the burdens of the Reconstruction Period were added the paralyzing fallacies of the Greenback issue and the nation-wide disasters and stagnation of the panic of 1873 and the

five lean years which followed. Not until 1880 did the South begin to come into its own.

EXTENT OF SOUTHERN INDUSTRIES

In 1880 the agricultural capital of the South was \$2,762,000,000 and the total value of its agricultural output \$756,000,000. The cotton crop was 5,761,000 bales of which the South used 179,000 bales and the North 1,610,000. Only about \$330,000,000 were invested in manufactures; the mineral output was \$18,000,000; the railway mileage was approximately 25,000, and the population 18,600,000. With these figures in our minds let us attempt the construction of a concept of the industrial South today.

The population of the South in 1912 has risen to 33,475,000, and the railway mileage to 90,930. The population of the whole United States in 1880 was about 50,000,000 and the total railway mileage 93,000. In general it may be said that the South today is in a far stronger position industrially than was the entire country in 1880. It cuts more lumber, mines nearly twice as much coal, produces nearly four times the petroleum, and nearly six times the spelter. It has more looms and spindles and a much larger investment in manufacturing plants. Its agricultural capital is greater and the products of its farms are worth 50 per cent more. It makes nearly as much pig iron and twice as much coke as the whole country produced only thirty-five years ago.

AGRICULTURE IN THE SOUTH

Agriculture is still and always will be the greatest business of the South and the backbone of its prosperity although even now the value of manufactured products exceeds, by nearly \$900,000,000, the revenue from its farms.

As all the world knows, the South affords a peculiarly favorable habitat to the cotton plant and the 36,000,000 acres under cotton produce annually from 14,000,000 to 16,000,000 bales of the fiber, or about 65 per cent of the world's crop. In this connection it may be said in passing that chemists by developing methods for utilizing values in the cottonseed have added from \$12 to \$14 per bale, or perhaps \$200,000,000 yearly, to the value of this single crop, so that the seed alone is now worth nearly as much as the entire crop of 1860. Cotton and seed together constitute about 30 per cent of the total value of southern farm products, excluding live stock. The ultimate products of the cotton plant together constitute 30 per cent of the merchandise exports of the whole United States. The value of staple, linters and seed in 1913 was \$911,000,000. Corresponding values for 1914 were \$704,000,000, so that the European war may fairly be said to have cost the South, on this one item, over \$200,000,000.

Many years ago a certain café in New York attained a cheap but wide-spread notoriety by embedding in the mosaic of its floor a few hundred silver dollars. There are 600,000,000 acres in the South and nearly every one of them carries on its surface more dollars than the floor of that café. Upon 110,000,000 of these acres the South now raises crops valued at more than \$3,000,000,000. From 1880 to 1910 agricultural capi-

¹ Opening Address, New Orleans Meeting, American Chemical Society, March 31 to April 3, 1915.