"FOR A GREATER NATION THROUGH
A GREATER SOUTH"

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OFFICIAL PROCEEDINGS

AT THE

FIRST SESSION

OF THE

SOUTHERN COMMERCIAL CONGRESS

HELD AT
THE NEW WILLARD
WASHINGTON, D. C.
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Historical Statement

THE Southern Commercial Congress was brought into being, from within the South, by resolutions passed in Chattanooga, Tennessee, August, 1908. The men gathered there in convention were, all of them, secretaries of Southern commercial organizations, who being aware of the unsatisfactory results secured by the regular lines of local effort and being aware of the lack of knowledge within the South itself and the general outside misinformation on regular conditions within the South determined to state in an effective manner and in public hearing the elements that predicate a stupendous Southern development.

The dates chosen were December 7th and 8th and the place Washington. The choice was thus made because a similarly important psychological moment had never occurred before in the history of the Union. The Governors White House Conference of May had brought into existence the National Conservation Commission whose labors were drawing attention to resources in increasing intensity week by week and whose culminative report was due in the week, December 7th to 12th. Using this opportunity, when the thought of the whole land would be directed towards the resources of the Union, the Southern Secretaries succeeded in making public an "interpretation" of Southern resources. The character of the men who spoke and the papers prepared showed that the judgment of the Southern Commercial Secretaries Association was absolutely correct in the matter. The effect upon the hearers was to create an unalterable confidence that in climate, water front, waterways, water powers, forest, mineral wealth and agricultural range in combination, the South had an unapproachable advantage. Based upon that confidence the men, gathered at the Congress, all of them citizens of Southern States, made the effort permanent and brought into being the Southern Commercial Congress of the United States of America.

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SOUTHERN COMMERCIAL CONGRESS

WASHINGTON

DECEMBER 7TH AND 8TH, 1908

To produce throughout the South a greater self-knowledge.

To free the mind of the world from misapprehensions regarding the South.

To inform by authoritative utterances regarding the possessions of the South.

To bring men together in the language of commerce, which is the language of peace.

To show the importance of conserving rather than wasting; of using yet not abusing.

SECTION I.—HEALTH AND CLIMATE.

SOUTHERN HEALTH CONDITIONS, CLIMATE AND TEMPERATURE.

WALTER WYMAN,

Surgeon General, United States Public Health and Marine Hospital Survice.

Climate is a complex condition. Many elements enter into its composition, but temperature is the climatic element that addresses itself most directly to the bodily sensations. The United States shows a range of about 30 degrees in the mean annual temperature. In the Lake Superior region, the mean annual temperature is 40 degrees Fahrenheit; in Southern Texas and Southern and Central Florida it is 70 degrees.

NORTH AND SOUTH DOES NOT NECESSARILY MEAN HIGHER TEMPERATURE.

But it does not by any means follow that because one place is farther south than another, that its mean temperature is higher. The mean annual isotherm, for example, that passes between Baltimore and Washington runs down through western Virginia to the Tennessee border, then north through Kentucky and West Virginia, west through Southern Ohio, Indiana, and Illinois, and takes a southern westerly course down to New Mexico to cheer that favored district with its beneficient mildness.

MEAN ANNUAL TEMPERATURE NOT THE MOST IMPORTANT FACTOR OF HEALTH AND COMFORT.

The mean annual temperature is not the most important factor from the point of view of comfort or of health. Cold winters and hot summers are the sort of seasons of which the average person complains, if he is so unphilosophical as to complain of the weather at all. *The freedom from cold winters is one of the blessed privileges of the South.* The winter mean temperature of northern Virginia is only about the freezing point, a temperature that no one could complain of who cares the least bit for cold weather. Sixty-five to 70 is the winter mean of southern Florida, *and anyone who sees how the hotels in Florida fill up in midwinter will feel sure that there is no popular dislike for such a condition of the weather.* In summer, however, the South has a little the worst of it from the point of view of temperature, but it is not so bad as many suppose. The summer mean of southern Vermont, New Hampshire, and central New York is 70. Northern Virginia touches only 75 degrees as a summer mean and one has to go down to South Carolina, Georgia, and Alabama, to get a summer mean of 80. The extreme readings of the thermometer are to most persons the most exciting thing in meteorology. Now about maximum summer temperatures—they are what cause discontent. These

red-hot isotherms take a straight course down the coast from Boston to Florida. They show a maximum summer temperature of 100 all along, except from North Carolina to Georgia on the coast, where the temperature may run up from 3 to 5 degrees higher on the hottest summer days. This is compensated for, however, by a maximum temperature of less than 100 in the western part of Virginia, North Carolina, South Carolina, and the northern part of Georgia. These are not, however, the highest temperatures that have been recorded in the United States. You have to go north and west for your veritable scorchers. North Dakota, South Dakota, and Montana have had temperatures of 110 degrees and the semi-arid regions of Arizona, 119 degrees. In the summer of 1891, the fairly blazing temperature of 122 degrees was recorded, according to the U. S. Weather Bureau, in Death Valley, California.

The absolute annual range of temperature (meaning by that the difference between the single highest and the single lowest temperatures ever recorded at any given place) has a bearing on human well-being, and its records favor the South. On this point a bulletin published by the Weather Bureau says: *"In the United States the absolute range is greatest in the interior and not on the coast.* In the north central districts it amounts to as much as 150 degrees (from a maximum of 108 degrees to a minimum of 43 degrees below at Huron, South Dakota), although it is generally less than 150 degrees, especially in the southern portion of the above named districts. In Atlantic coast districts, the greatest absolute range is found in northern New England, 127 degrees, and in the States bordering on the lower lakes (from a maximum of 95 to a minimum of 32 degrees below at Northfield, Vermont). The least absolute range is 59 degrees at Key West, Florida (from a maximum of 100 to a minimum of 41 degrees), and this is also the least absolute range for the whole country. In the Gulf States the absolute range is less than

100 degrees along the coast; back from the coast a distance of 150 miles it probably increases to 110 degrees."

The longer duration in the South than in the North of the season of elevated temperature must, taken as an isolated fact and regarded solely from the standpoint of human well being, be considered a disadvantage to the South. On the other hand, the long continued warm weather of the summers in the South cannot logically be considered alone. It must be thought of in relation to the long winters of the North. Open air life is on all sides admitted to be a hygienic desideratum and such a life is certainly more practicable in the South, where the winters are mild and the summers long but not intolerable, than in the North, where, though the summers are short, the winters are often so cold as to confine people much of the time to their houses.

We speak of the climate of the South. Europe is the continent in which nearly all the white population, both North and South, originated, and *from a European point of view, almost the whole of the United States is south.* New York City is just about as far south as Naples, Italy, and certainly Naples must be considered a southern city. Italy is not so far south as to have prevented its originating the ancient Roman civilization which, in arms, laws, art, and literature, stands among the foremost of the great nations of history. It has been contended that the climate of the Mediterranean region was not the same in ancient times as it is today. Careful research, however, has shown that there is *no sufficient warrant for believing in considerable permanent changes of climate over large areas, even with the lapse of thousands of years.* These facts have not of course been established by the records of the thermometer, because the first thermometers for recording the temperature of the atmosphere were introduced by Ferdinand, the Second, of Tuscany, in the middle of the Seventeenth Century. From the earliest ages the study of climatology had been pursued without the aid of such instruments. Ancient methods have been repeated in

late years and a comparison made between ancient and modern climates. Twelve years ago a series of studies made in the National Observatory at Athens, Greece, attracted the attention of the scientific world. The distribution of certain fruits and cerials, the time of planting and harvesting, as recorded in authentic ancient writings going back 400 years before Christ, were carefully compared with the data of modern agriculture. The date palm was the subject of special study. So it was determined that the climate in the classical countries about the Mediterranean is the same today as in the florid days of their greatest prosperity. The vast Roman Campagna, in ancient times a well-peopled region, the seat of many flourishing cities, became covered in the middle ages with pestilential marshes, and it is only in very recent years that modern sanitation has succeeded in partly restoring to man's use this valuable area of land. The vastly different economic conditions existed though at different periods of history in the same country and with the same climate. There is an important lesson in this. It teaches that ***man can make or unmake the prosperity of a country, but that he is powerless to alter its climate.***

The South is a goodly land. It is not only a good place for man, but it is a good place for living things, and unfortunately some of these living things, for example, the germs of yellow fever and malaria and the hookworm, are the enemies of man. Man cannot occupy any country uncontested by the germs of disease, and this is particularly true in countries like the South, where sunshine and mild weather favor all forms of life, both good and bad. Here sanitation comes in, but first of all the sanitarian must be able to guage the damage done to human society by its enemies of the animal and vegetable kingdoms. He must have a guide to sanitary action. Vital statistics are the gauge and guide required. We want sickness statistics, and concurrently we must be able to gather mortality statistics. The sanitarian is a physician whose patients are communities instead of individuals.

To make his diagnosis, he must feel the public pulse. Without accurate diagnosis, he cannot apply the most effective treatment. The pulse of the public is statistics.

The census mortality registration area includes at present 15 States as follows: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Michigan, Indiana, South Dakota, Colorado, and California. It inclues also in addition the District of Columbia and 78 cities, some 26 of which are in the South. These 26 cities are hardly enough to feel the pulse of the South.

The average death rate was 2,300.4 per 100,000 of population for the year 1906, from all causes, in 26 Southern cities with effective local registration ordinances, and in which statistics for the white and colored population are available. The total population for these cities was 2,462,939. The rate per 100,000 for the white population only was 1,852.8. The rate for the whole population for the 25,784,938 of all registration cities throughout the United States was 1,723.0. So that on the aggregate the Southern cities showed a slightly greater death rate for the white population than the totality of registration cities in the United States. As for rural mortality, no statistics are available for any State south of Maryland. Rural Maryland, with a population of 667,391, made a good showing in 1906, however, particularly for the white population. The death rate in rural Maryland from all causes per 100,000 of population was 1,076.5 among the whites, and 1,527.3 among the colored people, giving a total of 1,198.0. The rate for the rural part of the registration area of the United States, with a population of 15,211,478, was 1,405.7.

Even when reliable death statistics are available, vital statistics will be far from complete. Death returns tell nothing of the great mass of common diseases, because many common diseases are not fatal. The prosperity of a community is greatly influenced by the number of persons sick and the

character of their illness; and the movement for the systematic collection of morbidity statistics throughout the country should have the support of everyone interested in his own and in the public welfare.

Speaking more generally, it may be observed, with regard to health conditions in the South, that great improvements have been made within the last 10 or 15 years in the sanitation of cities, through improved water supplies and sewerage, drainage, and good paving. This is obvious to the casual observer as he travels through the cities of the South, and it is apparent that there is an awakening in matters of sanitation equal to that in any other section of the country.

Impressions have prevailed concerning health conditions in the South which, though perhaps justified 25 years ago, are now entirely unwarranted. A principal cause for any present false impression is undoubtedly due to *yellow fever*, which formerly so frequently afflicted our Southern States, but which, it may fairly be claimed, is *no longer a factor to be considered in the determination of health conditions*. The great discovery of the transmission of yellow fever by the mosquito has given directness to the efforts to prevent its spread, so that *no longer* is it looked upon as a *mysterious invasion liable at any time, through unknown causes, to introduction* and to spread thoughout our Southern territory. That this disease can be successfully fought, even after it has obtained headway was amply demonstrated in 1905 at New Orleans, where, at first obscure and unannounced, it finally demonstrated itself openly and alarmingly, but was obliterated by efforts based upon modern scientific knowledge and that, too, before the coming of frost. In former periods it was thought that only with the appearance of frost would there be a cessation of the disease. But this no longer holds, and our demonstrated ability to check the disease has restored confidence.

A striking illustration of this may be cited as occurring in the State of Louisiana at New Iberia in August, 1906, where

one case of yellow fever was discovered, no unnecessary alarm was raised, all the precautions known to modern science were taken and there was no spread.

Another important fact bearing upon the exclusion of yellow fever is that the Southern States have given up the administration of their local quarantines to the National Government. More than 250 delegates, representing the Southern States, including 7 governors, many senators and congressmen, prominent physicians, and men from all important walks of life, met in convention at Chattanooga, Tenn., in November, 1905, and passed resolutions favoring National quarantine. The result of this convention was expressed in the Act of Congress of June 19, 1906, and today all the Southern quarantine stations are administered by the National Government, excepting those in Texas, where on account of technical difficulties, with regard to property titles, there has been necessary delay in the establishment of National stations. The exceptional care of the National Government is seen in the supplemental surveillance established at New Orleans and Mobile over passengers who have arrived from infected or suspected ports, notwithstanding they have passed the quarantine. American influence has also minimized the danger from Cuba, which formerly but not now was a perennial menace.

The care of the National Government is further seen in stationing at every port in Mexico, Central America, the West Indies, and certain ports in South America, where yellow fever prevails or is suspected of prevailing, its trained medical officers to prevent the conveyance of infection, either by vessels or by their personnel, to our Southern seaboard.

Another modern feature favorably affecting health conditions in the South is the growing influence and power of the State boards of health. The National Quarantine Act above mentioned has had a favorable effect with regard to the State boards of health, permitting the withdrawal of their

activities from maritime quarantine, which is properly a National function, and their more thorough devotion to internal health conditions.

There do not appear to be any natural conditions in the South which necessarily make it less healthful than other portions of the country. Such diseases as malaria and typhoid fever are subject to the same causative agencies as prevail elsewhere, and as to tuberculosis, the climate is favorable in that it freely permits and encourages life in the open air. With regard to this and other diseases, the conditions seem more favorable than in colder localities where people are prone to shut themselves up with the disease. As to hookworm disease—due largely to soil pollution—the conditions favoring its spread can obviously be readily removed. And in fact all of the important infectious diseases that are found in the South are subject to man's will if man only will. This may be said, it is true, of all portions of the country, but it is particularly true of the South.

From the foregoing, I would not be understood to claim that sanitary or health conditions throughout the South are all that could be desired, nor could I say the same concerning the North or, any foreign country, but I do mean to say that with its salubrious climate, one may settle in any of our Southern States, and by observing for himself and his family the sanitary laws and principles now so well understood, he will be under as favorable conditions for health and length of life as he could be anywhere. But if he ignores sanitation in his environment, he is subject to the incidents of disease, just as the same neglect will produce the same result in the North. And he will likewise be subject to such incidents if, instead of sanitary vigilance, he adopts what has wrought the physical ruin of so many in semi-tropical or tropical countries, the intemperate use of alcoholic liquor. But the South has recently entered

upon a vigorous warfare against the intemperate use of alcohol. It is waging an apparently successful contest, which must in time have its favoring influence on the physical welfare. And this, together with improving sanitary conditions and beneficent climate, will make of the South a territory unexcelled in all that pertains to health and vigor in man.

SECTION II-A—TRANSPORTATION.

THE INFLUENCE OF THE PANAMA CANAL ON THE INDUSTRIAL DEVELOPMENT OF THE UNITED STATES.

HON. LUKE E. WRIGHT, *Secretary of War.*

The Panama Canal, a vision of one century and a promise of another, is, we may reasonably believe now, to be a reality of ours. Since that September day, almost four hundred years ago, when Vasco Nunez de Balboa looked down from the heights of Panama upon the waters of the Pacific and discovered the tremendous fact that only this narrow stretch of land separated ocean from ocean, men have labored and have suffered and have died in the pursuit of this vision and for the fufillment of this promise. Balboa himself crossed and recrossed the Isthmus. More than this, he collected materials for vessels on one shore and transported them piece by piece overland to the other, and there rebuilt his ships to continue his search by sea for what he could not find by land. He labored faithfully we may believe for the glory of his master and his king, and found, as too many found then, reward in a shameful death.

Others followed him, seeking to discover somewhere the strait that seemed must inevitably connect the oceans and that would give to the world a new route to the Indies. Still others, undismayed by the failures and the sufferings of their predecessors, looked forward in their turn, when it became evident that no such strait existed, to the creation of the channel that nature had failed to provide. Charles V. of Spain, it is said, himself, as early as 1520, directed a survey of the Isthmus with the purpose of a canal in view. Later, project after project and route after route were considered. Tehuantepec, Nicaragua, Panama, and Darien were each

from time to time examined or surveyed without result. And thus it remained for France and for Ferdinand de Lesseps to change vision to promise through actual commencement in 1879 of the construction of a canal across Panama. By 1883 operations on a large scale were under way. The failure of this work, the bankruptcy of the company, and the disgrace and death of de Lesseps are still too recent in the minds of men to need more than reference here. But though de Lesseps failed and though the succeeding company failed, credit is still due the French, not only for the promise given to the world, but for the actual constructive work performed. Between 1883 and 1904, when the United States assumed responsibility for the undertaking, over 81,000,000 cubic yards of earth and rock were excavated. Half of this excavation will be utilized in the construction now under way. Since 1904 we have excavated 54,000,000 cubic yards of material; but while this shows clearly the advance in engineering art since de Lessep's day and the effect of improved methods and machinery, the same thing is shown, and the progress of commerce and shipping, and our wider outlook on future world affairs are still better revealed, by the plans under which the work is now proceeding in comparison with the plans under which de Lesseps failed. Though he dreamed of a sea level while we cling to locks as not only quicker and cheaper of construction, but better for practical purposes, yet he planned for a depth of only 29.5 feet and a width of 72 feet, while we are building for 41 feet of depth and 200 feet of width. We commenced work in May, four years ago. From then until the end of October of this year, we have excavated, as I have just stated, 54,000,000 cubic yards of material, while there remain, it is estimated, 88,000,000 cubic yards to be removed. But it is important to remember that of this total excavation for four years almost two-thirds have been excavated during the last twelve months, and that at this rate the canal within a few years must be an accomplished fact.

It is hardly to be questioned that a project so long contemplated and for which so much treasure has been expended, so much suffering wasted, and so many lives lost, may properly be expected to give on completion results of vast importance not alone to one nation but to the world. More and more with the progress of time has it become evident that no estimation of these results has ever been too great. From whatever point, political, military, or industrial, we view it, the importance of the canal remains the same. We are concerned here, of course, directly only with its industrial importance; but whatever affects our political and military life affects also our commercial relations with the world, as, conversely, our political and military life is largely shaped by these relations. Though we neglect these aspects of the canal, therefore, we should not forget them, nor fail to realize their close connection with the subject that attracts us now.

The Panama Canal, when completed, will influence in varying degrees the commerce of more than half the countries of the globe, and affect to some extent the trade relation which each of these bears to the others. But, everywhere, commerce is dependent upon transportation. Its every advance produces or follows the discovery of new routes, improved methods, or increased facilities. This is true both for land and sea. But the paths that commerce follows by land are, comparatively speaking, local; while the sea which covers so large a part of the earth's surface is the world's commercial highway. Across it every commercial nation sends its fleets laden with the things it has to exchange with others for the things it wants. Fortunately, not only for commerce but for the progress of civilization, no country produces everything that it wants. Fortunately, also, few regions can claim a monopoly of any product that others need. For the things that a country lacks and wants, therefore, it may enter the markets of the world where the nations compete and where charity is unknown. The success-

ful bidder in this world mart is always the country that can supply the product wanted in the best form and at the lowest price. In the determination of the price, however, transportation often means more than production. For this reason the first advantage lies with the producer nearest the point of need. To overcome this advantage other producers seek to reduce the cost of production below that of their successful rival, to increase their facilities for transportation beyond his, or to find new routes of travel that will enable them to compete with him on more favorable terms. To these ends a large part of the ingenuity of man and untold treasure have been devoted since first barter began; and to these ends the United States is now devoting the best of its talent and hundreds of millions of dollars in removing the fifty miles of earth and rock across the isthmus that separates the two great oceans and bars us from competition for the trade of the Pacific. But distance is not the only factor of transportation. Another almost equally important is the dependence of freight lines, for successful operation, upon homebound as well as outbound cargo. Imports, in other words, are quite as important to commerce as exports.

In this case, moreover, though the labor and expense are ours, yet the canal we build is for the world. Though we shorten the distance that separates us from the markets we desire to reach we give similar, if not equal, advantage to our competitors. Though we add to our own industries we encourage the industries of others, and though we increase our own transportation facilities we afford opportunity for the same or greater increase elsewhere. All of this, truly, is for the progress of the world, and for the benefit of mankind; yet it is doubtful if these altruistic purposes would be sufficient in themselves, or that the canal would now be building if we could not reasonably expect to profit commercially more than the others we help.

Who then are our competitors in the commercial world? To what extent are we helping them in benefiting ourselves?

What and where are the markets we desire to reach? What have we that they need, and what may we expect in return? What effect will the canal have in adding to our transportation facilities? What effect upon those already existing? What sections of our country are to profit most, and what, if any, are to suffer injury?

The first striking effect of the canal will be in the reduction of distances between our own coasts. From New York to San Francisco by sea is now nearly 14,000 miles. Yet notwithstanding the great development of transcontinental railways and an immense local coast trade, the exchange of commodities between the east and west coast of the United States is still conducted in part over this long route. The railroads and the ocean lines are still competitors, cheapening, through competition, freight rates for producers and consumers; yet paradoxically enough improving constantly, through the struggle for control, the transportation facilities both by land and sea. The Panama Canal will reduce this distance by almost two-thirds, or to about 5,000 miles; and it seems impossible to doubt that with this advantage the exchange of commodities between the coasts must be vastly quickened, cheapened, and increased.

This is for our home trade only. When we go abroad, the change is no less important. Excepting for the nitrate products of Chile, obtainable in sufficient quantities nowhere else in the world, the western coast of South America is to us now, commercially speaking, a sealed book, which the completion of the Canal should open to us at a page well worth the reading. The Pacific frontage of South America has more than triple the population and triple the area of all our Pacific States. The distance from New York to Valparaiso by the Strait of Megallan is nearly 9,000 miles. The distances from New York and from the English Channel are nearly equal, while Southern European cities have a slight advantage over the ports of the United States. The Panama Canal will cut this distance almost exactly in two, and while

it will give new advantages to European traders as well, our ports will still have from two thousand to three thousand miles the better of Europe in the journey to the west coast of South America.

Nothwithstanding its population and its great natural wealth this section has few manufactures and comparatively little agriculture. Because of the obstacles that nature has imposed and the large capital necessary, the western coast of South America has been lying idle while more accessible resources elsewhere have been drawn upon. But these conditions will change in the future, are in fact already changing. The modern tendency to organize capital on a large scale will give to this region a development along lines similar to those that have operated to give the United States its industrial pre-eminence.

Capital hesitates to venture into the unknown and into the uncertain. The remoteness of this section from the financial centers of the world no less than the frequency of political disturbances, has prevented the large investment of foreign money in the past. But more than these, the lack of that intercourse between its people and the people of other countries due to the difficulties of travel and transportation have made impossible the personal acquaintance necessary to a knowledge of the trade wants of any people, and for the reciprocal trade development that is the foundation of all important commerce. In spite of these conditions, considerable foreign capital has still been attracted and Western South America already holds an important place in the world's trade. In the products of its mines, its nitrate beds, and its sugar fields, it finds a valuable export trade in exchange for the foodstuffs, textiles, manufactured articles, and machinery that it necessarily imports. But it forms under existing conditions only half an industrial unit and needs for its complement the aid of the manufactures of Europe and the United States.

In the past Great Britain and Germany have almost wholly

supplied this need. The United States has furnished less than 10 per cent of its imports. The completion of the canal should in the future give to the United States the same dominance there that it exercises in countries similarly situated. Canada and Mexico draw nearly 60 per cent of their imports from us; and notwithstanding the greater difficulties of transportation we still furnish 30 per cent of the imports to Venezuela and Columbia.

While a marked effect of the canal will thus be the reduction in distance along the routes between the Atlantic ports of the United States and the Pacific ports of the three Americas, this is second in importance only to the greater trade opportunities that seemingly must result for us in the Eastern Hemisphere. We have had in the past a large and increasing commerce with China, Australia, New Zealand, the Hawaiian and the Philippine Islands, and other Pacific regions. While in many cases this trade has been marked by a serious decline during the past few years, this has been due doubtless to causes purely temporary in character. The restoration of the former proportions of this trade is probable under any circumstances, but that a new impetus, such as may be expected from the opening of the canal, is needed, is not to be doubted. Where these countries will not be brought closer to our doors by the isthmian route, we shall, at least, have the choice of two routes in reaching them. Thus, as with Japan and China, the present routes give an advantage to Europe, which the canal may reverse. At present the distance from New York to Australia by way of the Suez Canal and by way of the Cape of Good Hope, is practically the same. By the Panama Canal, New York will be brought nearly 4,000 miles nearer to Sydney and over 1,500 miles nearer to Adelaide, the most westerly port of the industrially important part of Australia. The distance between New Orleans and Adelaide will be reduced by over 3,000 miles. New Zealand will be brought 5,000 miles nearer to New York than the route by way of the Cape of Good Hope,

and 2,500 to 3,500 miles nearer the eastern coast than the route by way of the Straits of Magellen. Today seven-eights of our exports to New Zealand are sent from the Atlantic coast. The effect of this reduction in distance therefore seems plain. The canal will not, it is true, reduce very largely the distance to the Philippines over the route by the Suez, by which our trade is now mainly carried on; but it seems probable that with the advantage offered by San Francisco, Yokohama, and Hongkong as ports of call, the Isthmian Canal will have the effect of changing a large part of this trade to the other route.

These, in brief, are the advantages in new routes and new markets that the canal will offer; but in a country so vast as ours, with so many varying interests, and with such widely separated industrial activities, it is not possible to show their influence definitely upon the country as a whole. It cannot indeed be expected that all sections of the country shall profit equally. The closer connection, for example, between the Atlantic coast of the United States and the Pacific coast of South America will be no more than the connection between the Pacific States and the eastern coast of the lower continent. The results to be expected, however, are vastly different. The manufactured products of the eastern States meet exactly the needs of the countries on the Pacific slope of South America, while there is little prospect of a much increased market for the products of our own western States in the countries of eastern South America. For our purpose, then, it will be necessary first to consider briefly the several sections into which our country may be industrially divided —the northern, the central, the western, and the southern States—and from the effect upon these sections separately determine in some measure the effect upon the whole.

The northeastern section of the United States is far in the lead of any other in manufacturing and in foreign trade, and though the other sections are rapidly expanding there is little probability that the northeast will ever cease to rank

agricultural products, but large quantities of agricultural machinery, wooden ware, vehicles, tools of all kinds, iron and steel products in great variety, boots and shoes, and numerous other articles. To this section comes an important volume of imports of wool, nitrate of soda, canned goods, hemp, jute, gums, and Japanese and Chinese goods in great varieties. A part of these imports are received at present through the Pacific coast, but for the most part they enter through New York. For its exports this section has markets in Central and South America, on the west coast of the United States and Canada, in Japan and China, and in Australia and Oceanica. With the completion of the canal by far the greater part of the trade of this section with countries lying to its west must make use of this route in reaching its destination. The increased traffic to which this will give rise must tend still further to the increase of the inland transportation facilities of this section, and whatever affects these touches its economic life at its very center.

The Pacific coast States have been, and still are, the portion of our country suffering most from heavy transportation costs through the distance that separates them from the manufacturing centers of the world adjacent to the North Atlantic. These States, not unnaturally, have developed an oriental trade of very satisfactory proportions, which there is good reason to believe will continue to grow, regardless of any increased activities in other directions. This trans-Pacific trade is, however, already small in comparison with their trade with sections of the world around the north Atlantic. With the completion of the canal and the greater rapidity and ease with which this section can be reached the trans-Pacific trade will be relatively still smaller. The western part of the United States is devoted largely to the production of food products, lumber, and the raw materials of industry. Their markets for products of this kind must for some years to come at least lie in the eastern part of the United States and in Europe.

first in these lines. Among the various industrial activities of this section textile manufactures hold an important place, and may properly be considered as illustrative of the general influence of the canal upon its industrial life. The exports of cotton manufactures in the United States are sent mainly to the countries of the Pacific Ocean. China for many years took about one-half of our exported cotton cloth, while our sales to Australia and numerous other Pacific countries steadily increased. A significant fact concerning our foreign trade in cotton goods is the small market which we have in South America. The cotton goods purchased by the South American countries reach $80,000,000 per year, barely six per cent of which is exported from the United States. The opening of the canal will not only give better rates to the Pacific countries, but will throw open the entire western coast of the southern continent to this trade. Again, in the manufacture of woolen goods, we import considerable quantities of Australian wool. At the present time most of this comes to north Atlantic ports of the United States by way of London, the present wool market of the world. With the growth of our wool manufacturing industries, it seems likely that we shall be obliged to import wool in increasing quantities, and not only from Australia but from South America, and South Africa, and it is not unreasonable to expect that the Isthmian Canal will make of New York or Boston the wool market of the country, wholly independent of its English rival.

Turning to the central States, if we consider them as a whole, their most important resources are those connected with agriculture. Nevertheless, many of them have important manufacturing and mining industries. The large and varied industrial development which this section has enjoyed, despite its distance from the coast, has been due to its excellent transportation facilities, afforded by the Great Lakes and its navigable rivers, as well as by its great railway systems. From this section there is exported then not only

All three of the Pacific Coast States are heavy exporters of wheat. Yet in California, for many years, the wheat crop has not increased, due partly to the low prices prevailing and partly to the fact that the transportation charges from the Pacific coast make it impossible, in comparison with other wheat-growing regions, to reach the principal grain markets in the East at a profit. Notwithstanding this, the total production of this section reaches at times one-seventh of the annual wheat production of the entire country. At present, this grain is largely shipped to the Atlantic region in sailing vessels around the Horn. By steamer through the canal, the cost of transportation will be cut in half.

California barley is being exported in increasing quantities to England. Already this product can meet the competition of other regions with advantage, and cheaper transportation would, therefore, enable the State to increase largely its sales in Europe and the eastern part of the United States.

The western coast has a large trade in lumber and even under present conditions sends lumber into the Atlantic countries. A limited amount takes the long voyage around the Horn. The demand for California redwood would be large in Europe if the price were lower. Even with the present cost of transportation, this State sends from one-fourth to one-third of its foreign exports in lumber to Europe.

This section is a large producer of fruit. Its annual production of nuts, raisins, and olives has reached large proportions. California alone raises one-third of the total consumption of almonds in the United States. Shipments of fruit for long distances must always, of course, be made largely by rail, but canned and dried fruits may be sent by sea with equally good results. Wine making is another of its most important industries. Wine is a kind of freight adapted equally well for shipment by rail or water; and notwithstanding the difficulties, a fair start has already been made in its exportation to Atlantic countries. These States

produce three-fourths of all the hops grown in the United States, a large share of which is shipped to our own and European consumers; they supply the woolen mills of the Eastern States with a large part of their raw material; and they have large mining interests for which they need the machinery obtainable at good advantage only far to the east.

Thus, if the industries of this section are few in number, they are large and important. If all of them can be carried on profitably under present conditions, there is none of them but would gain with the lightening of the burden now borne in the way of excessive cost of transportation. The general effect of the canal then upon the people of the Pacific coast will be to enable them to buy the materials they need cheaper and to sell their products dearer; to carry on a larger trade at home and in Europe; and to meet more readily and successfully the growing competition of countries whose similar products make them commercial rivals of our western States. Argentina, for instance, is a large and growing exporter of grain and wool. It has all the requisites for successful horticulture, for the successful production of fruits and wine, and in almost every way for the establishment of serious rivalry with our Pacific States. Much of the same development may be predicted for South Africa and Chile. Without the canal, the west coast would have serious and increasing difficulty in meeting this competition, and its completion is important, therefore, to this section not only for the direct aid that it will give but for the direct injury that it will prevent.

Thus, at whatever section of the country we glance, east, central, or west, it seems that it may be expected to profit and to profit largely from the construction of the Panama Canal. More than this, whatever section we study seems likely to profit so largely that it must appear, until we study other sections similarly, that it can only derive such benefits by corresponding sacrifices in these others. It is the more astonishing then to discover not only that this fortunately is untrue,

but that the section which above all seems assured relatively of the greatest benefits is the section we have yet to consider here, composed of the States lying in the South and grouped largely around the Gulf of Mexico.

The products of the South now find their foreign markets mainly in Europe, but they are desired in greater or lesser degree by nearly all countries, those of the Pacific as well as those of the Atlantic. Because of their geographical position, the Southern States cannot now readily reach the markets of the Pacific, but with the completion of the canal, they will be placed in the most favorable position of all the States for the creation of a great Pacific commerce. It seems inevitable that the proximity to the canal of the Gulf States and Gulf ports in comparison with the North Atlantic section of the country, will develop a direct trade through the canal and draw a large amount of the export and import trade of the Mississippi Valley to the Gulf ports. To overcome the advantage of the more northerly ports, especially New York, with their greater facilities for shipping the Gulf ports will be forced to increase their own facilities for this purpose. Yet even now Port Tampa, Pensacola, New Orleans, Galveston and Mobile, developed through the railways having their termini at those points, are capable of handling a large commerce. These ports have the commercial advantage of being nearer than the Atlantic seaboard to the larger part of the central west and Mississippi Valley. They are convenient gateways for the traffic of this entire section. Distance, as I have said before, is not the only factor but it is nevertheless an important one in determining the direction of traffic, and it will be an added force operating to increase the future commercial importance of the Gulf ports to the Southern States. Many commodities of the middle west are now moved a third of the distance across the continent for shipment to the Orient through eastern seaports. New York City handles at present by far the larger share of the Oriental and Western South American commerce of the southern

and central sections of the United States. The canal will force a large part of this traffic through the Gulf and the central States will have the advantage of a new route which they will adopt or refuse to adopt in accordance with the conditions of competition prevailing. Greater facilities, together with established custom will give to eastern ports the initial advantage and the effect of the canal upon the traffic of the Gulf States will consist probably less in diverting existing traffic to new routes than in bringing about a trade not now in existence.

But not only as a gateway for other sections but in the development of a direct trade for its own products will the South profit through the canal. The raising of cotton has been the dominant industry of the South for nearly a hundred years, and notwithstanding the importance which the development of other resources is reaching, it will probably retain its place. The multiplication of cotton mills and the manufacture of cotton seed products will help in strengthening the industrial position of this crop in the South. The South has had in the past an important market for raw cotton in the Far East. From 1895 to 1898 Japan's imports of cotton from the United States increased from less than nine to over thirty per cent. Among the manufactured products from this raw material cotton cloth shipped from the United States finds its way to many Pacific countries, but mainly to China, Australia, and the British East Indies. This is a demand that until very recently was increasing even under the present adverse conditions. Thus, the cotton manufacturers of the South, as well as the producers of raw cotton, will be served by the canal. With nearly 10,000,000 spindles already in operation and new mills in process of erection, the growth of the cotton manufacturing business in the South is limited only by the extent of the market that can profitably be reached; while the extent of the market that will be thrown open with the completion of the canal cannot be well defined.

The South has now, commercially, the most important timber district of the United States. Its standing supply reaches probably thirty per cent of the total amount still left within the boundaries of the country. Our exports of lumber, of which the Southern States furnish more than half, are large and increasing. Seven-tenths of these exports of the South now go to Europe. But there is a large and rapidly growing exportation, not only to Mexico and the West Indies, but to Brazil, Uruguay, and Argentina. Comparatively little is shipped to the west coast of South America, yet the countries there are obliged to import a large part of their lumber, and the fact that our product satisfies the needs of their neighbors to the east leaves little doubt that with the completion of the canal we shall be able to meet the similar wants of these Pacific countries. Hard woods from the Southern States are now being shipped not only to the Atlantic South American States, but to the Pacific coast of the United States. The cost of transportation by an all-water route from Memphis through the canal to the Pacific markets will be so low as to make the development of a still greater trade possible. The industrial progress of the west coast of the three Americas that may be expected to follow the completion of the canal will greatly enlarge their demand for lumber. This larger business will be shared both by the regions of present supply and by new ones at present debarred by their inaccessibility to the markets. The possible limit to our lumber market unfortunately seems fixed rather by the supply than the demand. Unless a wiser policy controls in the future than has led to the waste of the past, it is probable that even our vast supply will not long survive the day that opens to it these new markets.

Again, an immense amount of fertilizers is used by the South on its cotton and tobacco plantations, its grain fields, and its farms; and future demands are bound to be still greater. Much of the soil of the South, while presenting excellent physical characteristics, is not strong in the chemi-

cal properties required by the products grown. Unless carefully maintained by fertilization it is soon impoverished. This being true, the South must unavoidably require constantly increasing amounts of fertilizer as the population increases, and the change from extensive to intensive methods of agriculture is made. This section has great stores of phosphate rock, the most important mineral constituent of commercial fertilizers. This rock is now the source of a large foreign trade and the basis of important manufacturing industries. In this manufacture, however, nitrate of soda is necessary, a product which, in the quantities needed, is obtainable only in Chili, and at present only around Cape Horn or through the Straits of Magellan. Over half the exports of Chile are now of this product. The opening of the canal will therefore not only enable the South to obtain more readiily the raw materials necessary for its manufacture of fertilizers, but will at the same time open to it the markets of the Pacific Coast, Austrialia, the Hawaiian Islands, and other countries in the Pacific for the manufactured product.

An important effect of the canal upon the trade of the Southern section will result from the more economical connection afforded it with the growing market west of the Rocky Mountains. This section has an increasing need for the coal, steel, cotton goods, cotton seed products, and fertilizers of the South, for which it can exchange its wool, wines, fruits, and barley, equally needed there. The opportunities thus presented to increase the imports as well as the exports of this section are important. In their efforts to increase their trade, the Gulf cities now suffer because thier exports are so much greater in volume than their imports. Few products enter the country by way of the Gulf ports. The greater development of these ports, and the increased transportation facilities centering there, both by land and sea, may be expected to develop a reciprocal commerce that everywhere is essential for economical transportation.

A notable phase of the recent industrial progress of the

South has been the growth of the iron industry, closely associated with its production of coal. The first coal mine in Alabama was opened forty years ago. Now this district has an output of 30,000 tons per day. The Southern States are producing at present nearly one-fifth of all the iron ore mined in the United States, and the Alabama and Tennessee mines yield nearly one-seventh of the total. Besides producing the raw material the Southern States are manufacturing machinery, engines, implements, and a wide variety of iron and steel articles, both for foreign and domestic trade. Many firms of their manufacturing centers are already shipping their products to or beyond the Pacific coast of the United States. But these industries belong to no section. They are almost national. The United States holds the first place among the countries of the world in the coal and iron mined. Iron and steel and their manufactures now constitute the fourth largest general class of exports from the United States. Our chief competitors are Great Britain, Germany, and Belgium. In selling for delivery in Europe, therefore, we are at a disadvantage and that we are now able to sell manufactures of this class in Europe shows the progress that we have made in reducing the expense of production. Not only European countries, but almost all other countries can be reached more economically now, so far as transportation is concerned, by European than by American producers; and until the canal route becomes available our manufacturers and exporters of iron and steel will find their lower cost of production offset by the greater expense of transporting their commodities to these markets. These products constitute a class of traffic for which water transportation is especially adapted, and will, therefore, naturally seek the canal route to our own Pacific markets. The advantages in manufacturing and exporting iron and steel products through the juxtaposition of their deposits of coal, iron ore, and limestone, and the short distance of the furnaces from the seaboard, together with their more advantageous location with reference

to the canal should give in the future to the Southern States a large share of the export trade in these products to the Pacific markets. The greater facilities of the Northern ports, however, will prevent their being debarred from successful competition. All sections should profit alike in this respect, since the development of trade in the Orient and the Pacific countries promises so large a volume of business to the iron and steel industries that with the canal once opened the United States should be in a position to dominate the trade.

Another result of the completion of the canal, affecting almost every section, will be its influence on the shipbuilding industries of the country. Already there are few industries of equal magnitude and few requiring so large a number of auxiliary activities, and that employ so large a force of skilled labor. The United States has the largest coastwise shipping of the world, but our foreign shipping has fallen off with a rapidity proportional to its advance elsewhere; and we have been far slower than others in making the change from sail to steam power in our ocean commerce. The Isthmian Canal will of necessity operate as did the Suez Canal to hasten this change. Through this result the canal will modify both the shipbuilding and the ship operating industries. The change from sailing ships to steamers will of course be accompanied by a change from wooden hulls to steel, which will necessitate a larger and earlier reoganization than would otherwise probably occur in many of the plants now employed in constructing wooden vessels. In individual cases this may be a burden, but its beneficial effect upon the country as a whole is not to be doubted.

A certain result of the opening of the Isthmian Canal will be an increased coasting trade between the Atlantic and the Pacific coasts. For this a larger fleet will be required, the vessels of which must be built under existing law in American yards. On the other hand it is to be doubted whether even the canal will be sufficient to overcome the disadvan-

tages under which the United States labors in the creation of an important merchant marine for foreign commerce. Nevertheless the increase necessary to meet the demands of our domestic service upon the opening of the canal will enlarge the tonnage built, tend to lower the cost of construction, and induce American builders to seek foreign commerce for their ships; while the increased trade abroad will add to the demand for ships for its conduct, and thus inure to the benefit of American shipbuilders.

But we may well consider in this connection whether a wiser policy ought not hereafter to prevail in this regard, and whether we should not take advantage of the opportunity afforded by the canal to begin the restoration of our merchant marine to something of the place it once occupied. From 1800 to 1860 the American merchant fleet was second in size of all the world's fleets, and second to none in enterprise and efficiency. Today the position of the United States in foreign carrying power is insignificant. The coal for our fleet now on its voyage around the world is carried in foreign bottoms. The American troops now in Cuba were transported in British ships. Our mail service with South America is probably the poorest known to any great nation, and is one of the causes of our comparatively small trade relations with that continent. In 1907 only about ten per cent of our combined exports and imports were carried in American ships. Our entire foreign fleet hardly equals in tonnage the fleets of any one of several great foreign private corporations. It is unnecessary to multiply illustrations of the present deplorable condition of our merchant marine. The truth, whatever its cause, is plain, and moreover, it is a truth that we cannot well afford longer to ignore. Every consideration, political, military, and commercial, demands the rehabilitation of our fleet. We have noncontiguous territories; we have a powerful navy, and we have immense investments of American capital abroad. The canal will be only an added inducement—almost an added necessity—for the

creation of a fleet to handle our foreign commerce. Trade follows the flag, as every other commercial nation recognizes, because trade follows acquaintance and intercourse. This is a question affecting every part of our country, the interior quite as much as the coast; and in my opinion it will be unwise to defer action on such an important matter until the completion of the canal may give still greater advantages to our competitors.

Though this is a subject directly related to a study of the effect of the canal on the industries of the country, it is not my purpose to consider here the methods best adapted to the upbuilding of our foreign merchant marine; but that some means to that end should be promptly inaugurated does not to my mind admit of discussion.

Lastly, an important consideration in determining the influence of the canal on American industries is the effect that this waterway is likely to have upon the railways serving the different sections of the United States. If the canal were merely to introduce a water route between our Atlantic and Pacific coasts as a competitor of the railroads for the traffic now in existence, the result, while important, would not compensate for the immense expenditure necessary in the construction of the canal, and might even be productive of harm to the existing lines of transportation. But the canal may be expected to do far more than this. Two courses seem open to the railways. They may reduce their freight rates and thus be able to hold their traffic against their rival. If so, the canal will have to depend upon the creation of a new business developed from the route thus created rather than from the traffic diverted from other lines. On the other hand, the waterway may divert from the railway lines a share of their through business. This is a probable result. If so, the railways will be obliged to secure new business or suffer a shirnkage in their traffic as a result of the competition. Such shrinkage is improbable. The canal is far more likely to bring new business to the railways by making them collectors

and distributors of the commodities carried between our seaboards by way of the Isthmus. Because of our great expanse of territory and widely distributed industrial activities, the origin and destination of only a small portion of our water-borne commerce can be at seaboard points, and notwithstanding our great inland water system, the collection and distribution of commodities is and must remain mainly the work of the railways. The canal will through this fact make possible the establishment of new industries along interior transportation lines in order to meet the general industrial expansion. This will add of course to the local traffic of the railways; and the supplanting of through traffic by local traffic operates always to benefit, not to injure, railway lines. Thus, while originally our transcontinental lines were compelled to depend almost entirely upon their through traffic, their chief aim has been to increase their local business, which with many and probably with all has now become of first importance. The canal in no wise can check the growth of this local trade, and every sign points rather to the immense assistance it will give to the industrial expansion of the territories served by these railways and to the consequent increase of the local traffic.

Moreover, in the shifting of interior lines of trade to meet the new conditions developed in our foreign commerce, new lines or increased development of existing lines may properly be expected. The demands likely to arise for increased railway facilities leading to the Gulf ports may be cited as an example of this effect; and for this reason as well there seems little doubt that, far from being injured, the railways of our country will profit equally with every other industry from the trade made possible by the canal.

Thus from whatever point of view we approach the problem under consideration, whatever section of the country we examine, whatever industry we study, the beneficial effect of the canal seems beyond question. And as the gigantic enterprise upon which we are now engaged proceeds more

and more rapidly towards successful completion, more and more clearly does its political, commercial, and industrial importance show forth to the world, and more and more does its influence upon our national destiny become apparent.

SECTION II-B.

INTERPRETATION OF SOUTHERN PORTS.

HON. C. P. GOODYEAR, *of Georgia.*

The seaport bears a peculiar relation to the development of the country.

There are but 83 seaports of sufficient importance to be reported in the Government reports; but 52 with a population of more than 2,500 people; but 24 deep water ports with 25 feet and more docks to sea. Of these 24 deep water seaports there are 12 on the Atlantic and Gulf seacoasts of the Southern States.

There were in 1900 10,157 cities, towns, villages and boroughs in the interior of the United States. The number increases rapidly each year.

There are no more seaports today than there were 100 years ago when our total foreign commerce was but $142,000,000. In 1907 it exceeded $3,300,000,000, an increase of more than 2,300 per cent. This foreign commerce has more than doubled every 20 years since 1830.

It will by all past records double again within 20 years. There will be no more ports then than now. There will be a vast increase of interior cities, towns, villages, boroughs. Man can create these anywhere in the interior, at every railroad station, every river landing, even at points where there

is neither, wherever man's energy choses to create a city, town, village, or borough.

Man may improve, he cannot except in rarest instances create a seaport. A harbor of refuge is not a seaport, but few of these can be created than at immense cost.

Twenty years from now when our commerce is $6,600,000,000 it will all have to go through the same ports.

Of the foreign exports of the country $1,861,000,000 in 1908, $648,000,000 was shipped through Southern ports, or more than one-third.

Leading students of the great transportation problem, among them that great leader of railway thought, J. J. Hill, agree that with the growth of our commerce there will be greater decentralization of traffic.

That the great ports of the North will continue to increase their foreign and other commerce, but by no such percentage of increase as in the past. Indeed this has been true for many years. The percentages of increase in exports from Southern ports has been far greater than from Northern ports. The increase from Southern ports since 1880 has been from $265,000,000 in 1880 to $648,000,000 in 1908, an increase of about 142 per cent, while increase of Northern ports has been far less.

Five leading Southern ports may fairly be compared with New York, the leading Northern port.

The increase exports, New York, 1902 to 1907, was 39 per cent. For same period, Galveston, 105 per cent. Mobile 111 per cent, Norfolk and Portsmouth, Virginia, 60 per cent, Savannah, 40 per cent, Brunswick, 70 per cent.

This decentralization of foreign exports will continue to increase in ever increasing percentages, especially with the development of our waterway transportation, for the South has of available river transportation, when improved, with but 30 per cent of the country's population, with but 27 per cent of its area, 40 per cent of its rivers navigable or susceptible of navigation.

The South has at her ports many advantages, among them lighter grades for her railroads, enabling a haul to or from her ports of a far greater load with the same motive power. Her water powers are never closed by ice as at the North. She has a marked advantage in distance for all South and Central American and Mexican trade, and when the Panama Canal is completed with all Pacific trade.

She has another advantage in the far greater safety of her coast line, as evidenced by stranding of vessels upon the Atlantic and Gulf coasts, a kind of disaster due to coast dangers, and not magnitude of business, In 29 years from 1878 to 1906, a total for the Atlantic and Gulf coasts of 11,132, 8,241 upon the Atlantic coast, North of Virginia, but 2,891 upon the extended coast line south of Maryland to and including Texas.

These manifold advantages of Southern ports need no interpretation.

The South's share of the import of the country is small but rapidly increasing, must continue to rapidly increase with the growth of our country, with the increasing wealth of the South. Until we import our Southern imports through Southern ports and cease paying toll to imports of other ports the South will not have fully achieved its commercial independence.

Our Southern seaports have rapidly increased in export through her ports of grain and provisions from the great West and Northwest. That business will continue to increase steadily and rapidly in the years to come paying a toll to the South.

The South, this Southern Commercial Congress, has a deep interest in the policy of the Rivers and Harbors Congress, not only as to her river and canal navigation, but as to her harbors. The harbor increases in value as the cube of increased depth differs from the original depth. Thus a 20-foot channel is worth to commerce eight times as much as a 10-foot channel, a 30-foot channel 27 times as much as the

10-foot channel, a 35-foot channel not quite 43 times as much as a 10-foot channel. The deeper the channel the greater the tonnage of vessels and the greater the tonnage the cheaper the freight.

The South is creating a greater surplus every year. Her harbors give her a great advantage in marketing it in the markets of the world.

Abram S. Hewitt, the great steel and iron expert, pronounced the South the coming Eldorado of American enterprise and American achievement. He saw much of his prediction proven before his death.

"Pig Iron" Kelly announced, after a thorough study of the South's resources especially in coal and iron ore, that due to the close juxtaposition of the coal, the iron ore and the limestone in the South, the South would ultimately make the price upon iron and steel for the world.

With 10,000,000,000 tons of iron ore already discovered in the South, a billion tons more than in all Europe, with 25 per cent more coal than all Europe, with a soil the equal of any in the country, and a climate worth more than her soil, with a vast area of timber lands, with half the deep water seaports of all our coast lines, the South is a land of promise and also of performance. There is no equally inviting field for capital or men. She has in the past 28 years accomplished much. In the 28 years to come she will accomplish far more. In 1880 she manufactured $457,000,000 of product, in 1908, $2,600,000,000.

In 1880 she mined 6,000,000 tons of coal, in 1908, 95,000,000 tons.

In 1880 her farm products were worth $660,000,000, in 1908, $2,225,000,000.

In 1880 she made 397,000 tons of pig iron, in 1907, 3,500,000 tons.

In 1880 her bank deposits were $148,000,000, in 1908, $1,156,000,000.

In 1880 her mineral products $14,000,000, in 1908, $287,000,000.

In 1880 she produced 179,000 barrels of petroleum, in 1908, 27,000,000 barrels.

In 1880 her lumber product was worth $39,000,000, in 1908, $365,000,000.

In 1880 she had invested in manufactures $257,000,000, in 1908, $2,100,000,000.

Her cotton spindles, 1880, 668,000, in 1908, 10,500,000.

The record is as marvelous in every avenue of industry and production, and in all this development her seaports play a most important part.

SECTION II-c.

WATERWAYS OF THE SOUTH.

Hon. John A. Fox, *Special Director*
Of the National Rivers and Harbors Congress.

We are gathered here today, in my humble opinion, to make history for that land so dear to the heart of every Southerner, and to take the first step in a decade of progress and prosperity marked out for her by the prophetic finger of destiny that will nowhere find a parallel in the whole world.

A true and loyal son of the South, I am grateful for the opportunity which you have given me on your program to express myself regarding her resources and her future welfare and to help in lifting her to the front. As I understand the purpose of this gathering it is not to encourage sectionalism, it is not for the purpose of drawing ourselves closer together to the exclusion of other sections, but it is rather for

the purpose of uniting that particular portion of this great country that has for fifty years through common cause, through common suffering, through kindred interest, been drawn together and excluded from participation in the wonderful growth and development that has been manifested in other parts.

The fourteen States commonly spoken of as the South emerged from the terrible conflict of 1865 with a handicap that it has taken forty years to overcome, and we just now find ourselves on the threshold of an era of progress and advance that will not only bring our section to a level with the development in other sections, but because of our wonderful resources enable us to even surpass those sections in industrial activity. This gathering then is very opportune, and will, I hope, serve to bring us as a people in closer touch with our fellow-workers in the North and East. It will enable our resources to become better known and may open the way for an invasion of capital and industry that will more than offset the invasion of forty odd years ago. It may be the means of bringing back to the glorious Southland some of her illustrious sons who after that terrible period of devastation, destruction and desolation turned their sickened hearts to the North, the East, and the West, and in those strange lands became captains of industry, leaders in finance, in statesmanship, and in sciences.

Of all the South's resources her most valuable is her stock of young men and women, and if we could gather back the 2,500,000 that have emigrated since the war, though we would rob the whole country of its best material, yet we would give back to the South her own most valuable product. If then this gathering of the Southern clans shall have accomplished some of these things, I shall have been glad to have shared in its deliberations.

You have asked me to discuss as a particular theme "The Watercourses of the South," and I know of no more valuable asset that she possesses, than this wonderful system. It is

an asset that is worth more to us in the coming era of prosperity than anything we possess. With a total area of but 830,272 square miles the fourteen Southern States are traversed by 17,288 miles of navigable rivers, exclusive of 945 miles of the Ohio along the borders of Kentucky and West Virginia, and exclusive of 1,060 miles of the Mississippi bordering Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana. This is one mile of navigable river to every forty-eight miles of territory, and yet Germany with her wonderful system of rivers and canals possesses but one mile of waterway to every 56 miles of territory. These 17,288 miles of navigable streams embody only those rivers which are carried in the reports of the Engineers as navigable, and yet there are many miles of additional watercourses that by proper improvement could be utilized. These watercourses, 132 in number, extending from the shores of the Chesapeake in Maryland down the Atlantic seaboard and around the Gulf to the Rio Grande, penetrate the coastal plain and carry the coast line inward from fifty to five hundred miles. The head of serviceable navigation on each of these is usually to be found at the foothills of the Appalachian Range, and so we may trace a line from Baltimore through Washington, Fredericksburg, Richmond, Goldsboro, Fayetteville, Cheraw, Camden, Columbia, Augusta, Macon, Albany, and Columbus, then around the end of the Range back up to Rome, Ga. Then Columbus and Jackson, Mississippi, mark the foothills further west, and skipping the Mississippi Valley we continue from a point 200 miles up the Sabine to Dallas on the Trinity, Waco on the Brazos, and Brownsville on the Rio Grande. These rivers are today in a poor state of servitude and have had little permanent work done upon them in our whole history, although $61,582,290 have been expended upon them for improvements in a haphazard manner. Their total combined tonnage, however, last year was 38,530,658 tons, valued at $511,079,650, so that even in their rediculously unserviceable condition they carried $8.30 worth of com-

merce in one year for every dollar expended upon them in their whole history, or to make the argument stronger, here is what they earned for the South in dollars and cents. It would have cost 7.3 mills per ton per mile to have shipped that 38,530,658 tons of freight by rail, yet according to water rates ascertained from all sources it only cost 1.3 mills to ship it by water, leaving 6 mills difference in favor of the water routes. Assuming that the tonnage moved an average distance of 100 miles, there would be 3,853,065,800 ton miles of freight and if you multiply 6 mills, which is the saving by water, into this you have $22,968,908 saved in one year by the total expenditure of $61,582,290 in keeping these rivers open.

Nor does this by any means measure the value of these watercourses, for their greatest earning capacity is in the normal and judicious regulation of railroad freights, the amount of tonnage carried by them being insignificant in the extreme.

To give some idea of this enormous amount saved through water competition, let us consider the cost of transportation on the several groups of railways in the United States, some of which compete with water rates, and some of which do not.

Name of Group.	*Rate per ton per mile. Mills.*	*Remarks.*
Transcontinental	9.3	No water competition.
Southwestern	8.8	No water competition.
West and Northwestern	8.5	No water competition.
Southern Lines	6.2	Competing with 17,288 miles of waterways with a rate of one mill per ton per mile.
East of Chicago	6.0	Competing with the Great Lakes with a rate of 0.8 of one mill per ton per mile.
Average in United States	7.3	

It will be seen at a glance that a difference of from 2.6 mills to 2.8 mills per ton per mile is enjoyed by the Southern States and the States bordering the Great Lakes because of the regulating influence of water rates; and this multiplied into ton-mileage handled by the railroads of the South last year would amount to more than $130,000,000, a pretty saving on the $61,582,290 expended by our government to keep these streams open during their whole history.

But the time has come in the South's history when this magnificent system of watercourses must be made something more than mere rate hammers, if we are to reach our full measure of prosperity. They must be improved and utilized to their fullest capacity and must be made to bear a larger share of our transported products. We have in the Southern States today about 67,181 miles of railroad to which we have entrusted the entire question of transportation. If these are not speedily augumented, not only by other and additional lines of road, but also by the utilization of all other routes of transportation, the South will be held in check as by no other means. By improving the rivers of the South we can add at once to our transportation routes the equivalent of 170,000 miles of rail track, because each mile of the 17,000 miles of water routes within our Southern borders can be made the equivalent of a ten-track railroad. Last year the average train of freight carried but 380 tons and traveled but 23 miles in 24 hours. There is not a single mile of waterway in the system I have mentioned but what could be improved to a permanent, reliable depth of 6 feet, on which, unlike a railroad track, any number of 380 ton barges could pass one another, traveling at a rate of at least 3 miles per hour or 72 miles in 24 hours. The cost of building and equipping 170,000 miles of railroad would with the terminals needed for them at the very least estimate require $4,250,000,000, and then the charge for transportation would be 7.3 mills per ton per mile, while to canalize and thoroughly improve our total system of watercourses by

which freight could be moved for about 1.5 miles per ton per mile, would hardly exceed $150,000,000.

The expenditure of this amount of money by the national government during the next ten years would do more to enrich the South than anything that could be conceived for her betterment, and it would prove the most lucrative investment ever made by the national government.

Such an amount would serve to complete the canalization of the great Tennessee river penetrating the richest hardwood forests, coal mines and iron mines in America as far as Knoxville, Tenn.; it would enable the Cumberland river to be made useful for 688 miles of its length through the fields, the forests, and the mines of Tennessee and Kentucky; it would add to the useful transportation routes of Alabama 814 miles of splendid slack water navigation, reaching Columbus, Miss., on the Tombigbee, reaching the rich iron and coal regions of Alabama at a point opposite Birmingham on the Warrior, and penetrating the most productive iron region ever known along the banks of the Coosa as far as Rome, Ga. The expenditure of such an amount would enable a reliable stage of 6 feet of water to be provided throughout 470 miles of the Arkansas river extending through Arkansas and the Indian Territory; it would reliably open up the wonderful store of lead, zinc, hardwood lumber, marble and stone on White river; it would enable the 800 miles of watercourses in the Yazoo and Sunflower rivers to be definitely and reliably improved for moving the wonderful production of cotton in that region; it would extend navigation on Red river far beyond Dennison, Texas; it would put in commission a 500-mile water route reaching from the heart of the cotton region of Oklahoma and Texas at Dallas to the seaboard by way of the Trinity river; it would open up 300 miles of the Brazos river to Waco in southwest Texas, and would enable the immediate construction of a 500-ton barge route for 800 miles along the Gulf shore from New Orleans, on the Mississippi to Brownsville

on the Rio Grande. Within the amount mentioned also the South Atlantic Inland Waterway of similar capacity could be at once completed from Baltimore, Maryland, to Jacksonville, Florida, and stable and reliable navigation could be effected on the Neuse, the Tar, the Palmico, the Cape Fear, the Waccamaw, the Pedee, the Wateree, the Santee, the Congaree, the Savannah, the Oconee, the Altamaha, and the Okmulgee, together with the Flint, the Chattahoochee, and the Apalachicola.

In considering this question two epigrammatic interrogatives present themselves: "Would it pay?" and "Can the nation afford it?" Our experience teaches us that such investments pay better than any other undertaken by the government. Take, for instance, the definite improvements which we have made upon the Great Lakes during the last half century and note the returns upon the investment. We have expended in all about $70,000,000 on the harbors and connecting routes of the Great Lakes, deepening them to a uniform and systematic depth of 21 feet, thus encouraging and stimulating water commerce, and as a result more than $358,000,000 are saved annually in the difference of freight rates to the people of the whole country. On the Manongahela river we have expended about $6,700,000 in perfecting navigation so that there is a reliable stage of 6 feet of water at all seasons of the year, and that investment has not only succeeded in increasing the annual commerce upon that river to nearly ten million tons but is saving annually in the difference of freight rates $4,000,000.

In the development and improvement of our Southern harbors we have even a more striking and convincing argument than this to show that the improvement of our waterways is a paying investment as you may judge from the following table, which shows the total cost of nine harbors, the value of their commerce in 1890 and 1900, and the per cent of increase during those 17 years because of the improvement that has been made.

Name of Harbor.	Total Cost of Improvement.	Value of Commerce 1890.	Value of Commerce 1907.	Per ct. Increase.
Baltimore	$4,721,269	$87,123,896	$142,556,257	63
Norfolk	1,628,366	21,349,038	628,000,000	--
Wilmington	3,835,655	7,071,781	19,379,344	174
Savannah	7,691,131	31,356,794	65,243,691	108
Tampa	430,812	2,090,341	7,425,078	255
Pensacola	725,956	3,474,286	19,825,341	470
Mobile	4,949,210	3,479,444	28,419,079	717
New Orleans	7,000,000	122,785,054	210,609,200	71
Galveston	7,591,359	24,862,623	244,357,680	882
Totals	$38,572,928	$303,593,257	$1,365,795,670	

It will be seen from the above that $38,572,128 expended in deepening nine of our Southern harbors has resulted in an increased value of commerce handled through them that annually amounts to more than $1,060,000,000. Nor is this all, for with deepened harbors come greater draft vessels with corresponding cheaper freights to all foreign ports as is evidenced by the following:

Cost of shipping 100 pounds of grain to Liverpool from

	1886	1906	Saved
Baltimore	12.71	6.72	5.99
Galveston	17.00	12.00	5.00
New Orleans	16.11	11.43	4.68

Cost of shipping 100 pounds of cotton to Liverpool from

	1886	1906	Saved
New Orleans	61.0	34.2	27.8
Savannah	54.7	30.4	24.3
Galveston	60.0	35.0	25.0

It will be seen from the above therefore that the $38,572,000 spent in deepening our Southern harbors is earning annually 25.7 cents per hundred pounds on all of our cotton shipped and 5.16 cents per hundred pounds on all of our

grain. The South shipped last year over 10,582,000 bales of cotton and produced over 818,000,000 bushels of grain, so that on the shipment of these two items alone we saved over $36,000,000 by reason of improved harbors; in other words, the cheaper ocean freight rate on our grain and cotton alone pays back every year the total amount of money expended in improving these nine harbors.

As to whether or not therefore the improvement of our Southern watercourses would pay, let us consider for a moment what would be saved through their improvement in transporting simply the raw materials produced in the South. These 17,288 miles of Southern waterway penetrate almost every Southern State, and would be enabled to carry a large part of the bulky freights, to say nothing of their regulating influence upon freights that would be carried by rail. The South produced last year:

3,445,221 tons of Pig Iron.
94,829,835 tons of Coal.
6,316,027 tons of Iron Ore.
2,253,198 tons of Phosphate.
9,289,471 tons of Coke.
230,000 tons of Sugar.

Showing a total of these raw products that amounts to 116,463,752 tons of low class commodities that could have been carried by water at a saving of at least one dollar per ton. She produced 10,582,966 bales of cotton on which one dollar, and in some instances two dollars, per bale could have been saved had these waterways been reliably improved, and she produced nearly 1,000,000,000 bushels of grain on which if only one cent per bushel had been saved in transportation either through direct means or through regulating the railroad rates ten million of dollars would have been gained. She produced 19,303,983,000 feet of lumber, which at a saving of one dollar per thousand in the cost of transportation, which is the very least that would have resulted

had these waterways been improved, would have amounted to more than $19,303,000. Here then are enough low class products from the mines, the fields, and the forests of the South that could be transported by water and save at the very lowest estimate over $156,000,000 every year on these waterways that would only cost about $150,000,000 to completely improve.

Yes, I say, it would pay a thousand fold and any such investment could certainly be afforded by the national government. Nothing will give the South a surer and more direct road to prosperity than will the immediate and complete development of these 17,288 miles of waterway, for nothing will regulate railroad rates so equitably and in no other way can we relieve the impending freight congestion or supply a cheaper means of transportation that will be free to all.

In conclusion, therefore, let me say that if this Southern Commercial Congress shall do no more than secure the early and comprehensive development of this magnificent waterway system throughout the South it will have achieved for our Southern States more than has been done in a century to advance their development and promote their welfare.

SECTION II-D.

SOUTHERN RAILROADS AND THEIR NEEDS.

JOHN F. WALLACE, LL.D., D. Sc.

This question has been extensively treated by leading railroad men, statesmen, and press of the South, and admirably covered by addresses on numerous occasions before various audiences throughout the South.

I therefore feel that the Southern railroad situation is gradually becoming better understood not only by the public at large but by the railway men of the South, who are jointly appreciative of the fact that the greatest need of Southern railroads is the confidence and support of the communities through which they run and serve.

Therefore, my remarks will be few, and are made in order that certain fundamentals may be read into the record of this convention.

For the purposes of this address the South is described as that portion of the United States lying south of the Potomac and Ohio Rivers and east of the Mississippi.

Shortly after the close of the Civil War, the South, realizing the changed order of things, accepted the situation in the spirit of American manhood and started on a new era of industrial and commercial development.

One of the first necessities was a comprehensive system of transportation facilities. The railroads which prior to the

civil war had compared favorably with those in the North, at its close were practically bankrupt, financially and physically, and were more the shadow than the substance of what they should have been.

Southerners with brains and energy, starting with 11,587 miles of detached, dilapidated and crippled railways, immediately commenced to lay the foundation of the present industrial and commercial prosperity in the South by reconstructing its lines of railway.

The efforts of these men and the confidence they were able to inspire in northern and foreign capital are best illustrated by the fact that today the South is served with 46,434 miles of railroad, serving eleven States, twenty million people, and representing a total investment in round numbers of two billion dollars.

Of these 46,434 miles of railroads only 1,134 miles approximately, or 2½ per cent, are double track. It is possible that the next ten years will see at least one-fourth or over ten thousand additional miles of second track.

It must be borne in mind that while transportation is the burden bearer of both production and commerce, it is only able to perform the full and complete measure of its functions when properly nourished and assisted by finance.

In ancient days the birth of civilization started with the ability to preserve food products. This grew from the temporary necessity of accumulating sufficient food to last from one chase to another, or to enable journeys to be performed or winter climates endured, to the storage of vast quantities of food to enable nations to survive years of famine, as was exemplified by the storage of grain in Egypt in the days of Joseph, which period history shows us was the crowning epoch of Egyptian civilization.

Today the measure of our modern civilization is our transportation facilities. Safe, efficient and rapid communication, and the economy of the world's transportation systems, are binding the nations of the earth closer together day by day.

and helping to create the conditions which will ultimately place the crown of accomplishment upon our modern civilization.

Coming back to the South, from which we have been temporarily led astray, it is self-evident to the careful observer that all the diverse interests of this section—agriculture, mining, manufacture, commerce and banking—are unavoidably and irrevocably bound up with the transportation facilities furnished and to be furnished by the railway systems ramifying its territory and performing a service for the South similar to that performed by the arteries and blood vessels in the body of corporeal man.

It is also apparent to the impartial observer that if the South is to reach its highest state of development its transportation facilities should not lag, but should lead the march of progress, and that this development should be stimulated in every possible way; and men of the South should never forget for a single moment that *the needs of the railroads are the needs of the South.*

It has been our custom in America to anticipate future needs in transportation, and in a measure attempt to forestall and provide for them.

The policy of foreign countries has been practically the reverse. The railway systems of England and of Europe have been constructed to take care of and supply a demand for transportation facilities that already existed.

The railroads of the United States in the South and West have been projected and constructed, and to a great extent financed by men whose inspiration was a firm belief in an unseen future and whose assets were largely composed of hope and an undying faith in the future development of their country.

Now the future demands for increased transportation facilities in the South are plainly indicated by past records, showing the growth of productive activities and the constant increase of tonnage to be moved.

If these requirements are to be met, demand and supply must move forward hand in hand. Additional tonnage will justify increased facilities, and increased facilities will stimulate still greater tonnage.

During the past 25 years the total products of the South, from agriculture, forest, mines, and manufactures, have increased in valuation over 225 per cent. During the last 5 years of this period, ending in 1906, the increase has been 50 per cent.

The common fallacy that when a railroad was opened for the transportation of traffic it was completed has long since passed away, at least in the minds of intelligent men.

The railroad of today is no sooner completed as a single track, than it becomes necessary to provide industrial spurs; additional or enlarged terminals; replace its temporary structures by permanent ones; widen its excavations; strengthen its enbankments; provide passing tracks; additional shop facilities, enlarged passenger and freight stations, warehouses, elevators, docks and wharves at water terminals, additional tracks, heavier rail, rock ballast, elimination of curves, reduction of grades, block signals, elimination of grade crossings, heavier engines, larger and better cars, to the end that the constantly growing requirements and exactions of modern traffic conditions may be met; all of which requires increased expenditures, which it is easily seen could not in any event be provided for out of earnings.

During the next ten years the railroads of the South will require $1,000,000,000 to enable them to fully provide for the increased demands for transportation facilities, an average of $100,000,000 per annum. Including the estimated increased mileage and the present capital investment, the resulting average capitalization would amount to $53,000 per mile, being $20,000 per mile under the present average capitalization of all the railroads of the United States today, which is $73,000 per mile.

Meeting the requirements of the railroad situation in the South by the expenditure of a round billion dollars during the next ten years as outlined above, would make the total investment in Southern railways at the end of that period, three billions of dollars on an estimated mileage of 56,000.

It would require average earnings of $9,000 gross per mile per annum, with operating expenses at 70 per cent of the gross, to yield sufficient net income to provide a return of 5 per cent on this total investment.

When these figures are compared with the present average gross earnings of the railroads of the United States, of $11,400 per mile per annum, with an average cost of operation of $7,757 per annum, resulting in a ratio of operating expenses to gross earnings of 68 per cent, the above estimates appear reasonable and conservative.

Even if this expenditure is made, and the results predicted, obtained at the end of the ten-year period, Southern railroads will still fall approximately 25 per cent short of yielding the present average gross earnings per mile per annum of the railroads of the United States today.

To provide funds to meet these ever growing and incessant demands for additional facilities, the railroad companies must necessarily be large borrowers.

The prosperity of the South in the next decade, and in those to follow after, depends upon the ability of the owners and managers of Southern railways to foresee and provide for future necessities, and upon the promptness with which the work is accomplished.

The ability of railroads to construct these improvements which are so essential to the future prosperity of the South, depends upon the willingness of capital to furnish the necessary funds for the purpose.

While legislation may control and regulate the returns upon invested capital, there is no process by which it can compel that investment originally. While investment is easily retarded it is difficult to attract.

There is probably no form of capital investment more open to attack or more liable to depreciation through unfair or unwise legislation than the railway investments of today.

While the speaker is a firm believer in the principles of government control and supervision over the corporate entities which have been created by the people and for the people, it must not be forgotten that every shield has its reverse, and that the exercise of such control and supervision must necessarily be along the lines of right and justice, which no mere legislative enactment can change. Any variance brings its own reward, which frequently spells disaster.

The power to control, regulate and supervise necessarily carries with it responsibilities from which there can be no escape.

Every tax, every restriction, every requirement which costs money or reduces revenue to our Southern railroads is a tax which must ultimately be paid by the communities which they serve.

The prosperity of the Southern railroads and the prosperity of the South are irrevocably bound together, and the *needs of the South are identical with the needs of the railroads.*

The basis of securing capital must necessarily be the ability of the borrower to inspire confidence in the lender that his capital will ultimately be returned to him intact, and that he will receive regularly and promptly adequate hire therefor.

No section of our great country has such reputation for united action as the South. In political matters this unity of action for years has led to the designation "The Solid South."

What the railroads in this section need today is *a solid South behind and beneath them;* a solid South taking a calm and rational view of the immense factor the railways have been and always will be in the development of its future greatness. A deliberate analysis of the present situation by

the business men of each State, should be the keynote of the future action of the solid South.

The adoption of a policy of fairness and liberality towards the railroad interests on behalf of all the Southern States, and the ability to convince the financial world that this action is sincere and genuine and will be permanent, is the great paramount need of the railroads of the South today.

Prompt action along these lines will enable the railroad companies of this section to successfully compete in the markets of the world for the capital needed to carry out the improvements outlined, and thus provide the facilities which will enable the producers of the South to ride the crest of the wave of coming prosperity.

In its calls for capital the Southern railroads must come into competition in the markets of the world not only with the railroad requirements of the North, of the East and the West, but with all the lines of human industry and endeavor throughout the wide world.

The difference between the five or six per cent paid by Southern railroads for the money which goes into their additional facilities or equipment, and the three or four per cent which may be yielded by the high class world investments, is merely the gauge by which the confidence of the capitalist is measured in the integrity of his investments.

Today it is not even possible to secure money for railroad development, either South or North, at any ordinary rate of interest. Why? Is it because money is scarce? No.

I can best answer this by a story of the panic of '93, when a citizen of Chicago dropped into the office of Lyman Gage, of the First National Bank of that city, and inquired of Mr. Gage if money was tight. He replied, "No, the bank had plenty of money." The citizen said, "That's fine; can I secure a loan of $100,000." Mr. Gage replied, "Yes, you can have it; we will loan it to you. What is your collateral, what security can you give?" It is needless to say that the loan was not made.

The customer afterwards remarked to a friend that he had found that the trouble was not that money was tight, or that money was scarce, but was due to the scarcity of collateral or security, which is only another designation for guaranteed confidence.

This is the situation today. There is not a railroad in the South, North, East or West that could not secure all of the funds necessary for any development it might desire to make provided it could show the capitalists to whom application for the loan was made that it could furnish security which would insure the repayment of the loan and the interest thereon as due.

I doubt if there is a single Southern railway system, the officers of which would not gladly today, take up, consider and block out a scheme for the improvement and betterment of their property, and commence preparations to enable their system to fully perform the increased functions of a common carrier, which the abundant years of the immediate future promise to require, if they could be sure, and in turn could assure their financial backers that the earnings of their road would be amply and safely sufficient to provide for, and take care of, the investment necessary.

Therefore, *remember that the neds of the railroads are the needs of the South.*

I presume there is no planter, miner, manufacturer, producer of any sort, banker, merchant or professional man in the wide South who would not say in a moment that every thousand dollars of capital invested in his vicinity, or in his town, or in his State, would be gladly welcomed and eagerly sought for, by the planter paying eight per cent and the merchant and miscellaneous producer from six to eight per cent, and that approximately one billion of dollars injected into the commercial channels of the Southern States during the next ten years would bring a relative measure of prosperity to every man, woman and child within its borders.

When it is considered that this amount of money could

be invested in additional railroad improvements and facilities that under proper conditions it could be secured at a rate not in excess of five per cent; that approximately eighty per cent or more would be spent for Southern labor and Southern material, and would find its way through every artery and vein of Southern trade and commerce, it would seem that the solid South should be thoroughly alive to the burning fact that—

The needs of the railroads are the needs of the South.

I might talk to you for hours about the evil and unfairness of legislative enactments to retard and make unproductive railway investments; of the injustice of any body of men attempting by legislation, without giving the railroad corporations proper hearing, to arbitrarily adjust their rates of toll for either passenger or freight, simply because politicians consider it a popular thing to do.

I might suggest a multitude of things which could be done to increase the credit of railroads throughout your section.

I might mention a multitude of things which have been done to injure and impair and prevent railroads securing the necessary capital to provide for their needs.

I might also attempt to enumerate the ill-advised actions of railroad managers and employees toward the public.

I might expatiate upon the foolishness and unwisdom of a corporation—the creature of the public—attempting to dictate to its master or declining to obey is commands.

It is doubtful, however, if the enumeration of the errors and shortcomings of the fellow-members of the same family ever tends to a better understanding or more harmonious relationships. The need of the hour is a recognition of the interdependent relations which exist between us all, and to remember—intensely, actively, potently remember—that an "injury to one is an injury to all," and that "United we stand, divided we fall."

SECTION III.

WATER POWERS OF THE SOUTH.

FRANK S. WASHBURN, C. E.

Nature, before Man's advent, marked the Southern States region as the home of Water Powers. The distinguishing natural characteristics of this region are the very ones which produce numerous and great water powers and foster industrial conditions making feasible their useful application. Consider the copious rain-fall with good seasonal distribution; massive, lofty mountains remote from the sea coast, covered by unbroken forests for the rain to fall upon; favoring topographical conditions under which impounding reservoirs are practicable along the tributaries; and geological action so universal in effect that every great river as it flows with its gathered waters through the lowlands comes to a place where it tumbles down over a rapidly descending bed. Note the exceptionally favorable climate; peculiar meteorological conditions, and a soil which seem to assure to the region a world monopoly of a universally necessary natural product requiring cheap and plentiful power for its fabrication; majestic rivers navigable almost to the mountain base; timber, iron and coal in great abundance and disposed for

cheap production; and everywhere the sea close at hand to the industrial section.

Barring the shore line of the Pacific in Washington and Oregon, and a still narrower strip along the summit line of the Sierras in California, and that of the Cascades in Washington and Oregon, the whole of the United States west of a north and south line drawn through central Texas may be considered as arid, the greater portion of it having a mean annual rain-fall approximating 15 inches. Extending in a north and south belt two hundred miles wide through central Texas, Oklahoma, Kansas, Nebraska and the Dakotas, is the semi-arid region, the greater portion favored with rain-fall averaging less than 25 inches per annum. East from this, extending to the Atlantic, is the great humid region, within which, however, there are greater differences of regional rain-fall than exist between the different grand divisions themselves. The northern half, being really semi-humid, has 30 to 40 inches rain-fall, while the southeastern portion, bounded by a line extending from Galveston on the Gulf Coast, north to central Arkansas, then east to northeastern Georgia, thence northeast to southeastern Kentucky, thence east to the Atlantic Coast, constitutes the true humid region that has 50 inches to 60 inches precipitation, while the mountainous portion thereof in east Tennessee, western North Carolina and South Carolina, northeastern Georgia, and northeastern Alabama, together with a narrow strip along the Gulf of Mexico, shows the extraordinary average of 60 inches to 70 inches of rain-fall per annum.

Even this striking superiority in rain-fall does not directly convey an adequate idea of the superiority of Southern water power possibilities, for it is the volume of water which actually finds its way into the streams that determine the measure of power, and this may be less than 2 per cent of the precipitation in a region of 20 inches average rain-fall, and exceed 50 per cent of the precipitation in a region of 65 inches average rainfall.

A full realization of these exceptional meteorological phenomena coupled with the unparalleled surface conditions comprised in the towering mountain masses of the Southern Appalachians covered with close set hardwood forests, nurtured in their birth place, impels the mind to the belief that here is the spot Nature selected to foster Man's efforts to transform to his uses the exhaustless energy of falling water.

RELATION OF WATER POWER TO THE FUTURE OF THE RACE.

How are we to interpret the modern consuming industrial activity of civilized peoples? Is it a phase approaching the zenith to pass and be interpreted by future generations as important only in that it was one more historical epoch, contributing much of value to the world, but from the excesses of which Man recoiled, setting his ambitions to something more worthy? Or will the evolution follow an ever ascending curve of material accretion into an indefinite future? Upon the answer depends in part the relation of water powers to the future of the race.

The severest critic of modern commercial tendencies must recognize that increase in the world's wealth, said to have doubled in this generation, has contributed such that makes for the moral uplifting of mankind, such as opportunities for education, less arduous toil, shorter hours of labor, more leisure, more recreation, freer interchange of thought, sanitary homes, appropriate clothing, and a diversified and plentiful diet. In view of this, and because the civilized people and the tribes directly in contact with them are increasing at a rate which will double their numbers every sixty-five years, and because furthermore that of the human family, sixty per cent are semi-civilized, or in savagery, unsupplied with material comforts, it is possible that it is now the dawn and not the noon of Man's busy day.

An industrial age of necessity, first and foremost, must be an age of power transformation. Increased production of

raw materials involve the use of more power in winning them from their primal condition. More manufactured products demand more power for their fablication. Greater activity in transportation is at the expense of more power. The growth of cities with their electric lights, water supply and transportation systems, increases greatly the per capita demand for power. To whatever degree may grow production, transportation and the enjoyment of material comfort, to even a greater extent will grow the use of power. But power development today has one ominous significance, for it is effected almost exclusively by the consumption of a waning supply of coal.

For the first time in the ages that man has occupied the earth it dawns upon his quickened intelligence that the cunning of his brain and the strength of his hand unrestrained and unintelligently guided tears down more rapidly than Nature restores, and that it is high time for the civilized peoples of the earth to safeguard their natural resources against inevitable and lasting destruction. What is the way out? How shall leaping demand be met by a waning exhaustible supply? Intelligent forestry will insure the timber supply indefinitely. The fixation of atmospheric nitrogen, intelligent manipulation of crops and preservation of soil covering will maintain the food supply. The use of various synthetic substances will relieve their natural prototypes. The application of Portland cement as a structural material in new fields, the growth of water transportation possibly at the expense of railways and the wider use of other metals and their alloys, may put forward the dearth of iron indefinitely. But every tendency is toward the increased rather than the diminished use of power, and how shall the burden be shifted from coal to some other source of energy?

Here then is the aspect in which water powers present their profoundest importance. They are the only known future great sources of power in an age of power shackled to an increasingly lavish expenditure of power.

WATER POWERS AS NATURAL RESOURCES.

Water powers, considered as a natural resource, have one distinguishing characteristic—they waste only in their non-use. Every year of idleness means the exhaustion of a comparable amount of coal and iron, and the loss of potentially useful energy that can never be recovered.

Water powers are eternal, and will exist as long as the sun shall shine, and moisture is evaporated, transported and lifted by wind, congealed by cold and pressure, and precipitated upon the land up gravity. However, indirectly but none the less disastrously, Man can ruin the utility of water powers by destroying the forests which store the rain at the stream sources, protect the surface from erosion, and the valleys and reservoirs from deposition. The useful application of water powers may be marred or prevented by the prior vested rights of railways or other structures occupying land needed as sites for dams, reservoirs, or conduits, by the construction on river banks of lateral canals for navigation, or by the initial construction of works, which while providing for only partial development of the full potential power of the stream, or by reason of faulty design are incapable of expansion or additions within limits of reasonable expense and bearable sacrifice.

THE RELATION OF GOVERNMENT TO WATER POWERS.

There is much misunderstanding of the nature and degree of Federal control of water powers. The fact that powers on unnavigable streams in no manner fall under Government supervision, is generally understood. But it is a common fallacy to suppose that powers on navigable streams are owned by or in some manner are administered by, the Washington Government.

The United States of America organized by the thirteen original sovereign States possess only such powers and authority as were expressly conferred by the Constitution. The relation of the Federal Government to streams rests

upon expressly conveyed power "to regulate commerce with foreign nations and among the several States and with the Indian tribes." All other properties and functions of navigable rivers apart from those involved in the regulation of commerce, their beds, the potential energy of the water and the water itself, and all properties of unnavigable rivers are withheld by the several States unto themselves, and this has been frequently affirmed by the Supreme Court. As conservator of navigation, the Federal Government can restrain any State or citizen acting under the authority of the State from using the bed, transforming the energy of the water, or otherwise using State or private property on a navigable stream, if the contemplated use jeopardizes navigation. Furthermore, constitutional prohibition rests upon the National Government and many of the States from engaging in the commercial enterprise of owning and constructing water power works.

The problem of preserving to the people their equities in natural resources including water powers will soon have to be met. Are private corporations to enjoy sole possessorship thereof in perpetuity? At the present time, in the absence of substantial co-operation by Government in the initial expense of development, the investor will be deterred from risking his money unless the entire resulting profit for all time is to be his exclusively. The fact that the National Government and some States are preserving forests at the sources of power streams, a necessary step to their permanent use as such, is pertinent as bearing upon the possible limitation of private ownership in water powers.

The Government of Ontario, Canada, is to become a purchaser of Niagara power on a grand scale, and will distribute and sell. Sweden both leases and develops its powers. The smaller political divisions of Norway build and operate powers, while Germany, as well as other countries, collect power royalties from users of streams.

It is not unreasonable to anticipate that greater control,

and possibly the actual exploitation, of water powers may become a recognized function of our less paternal Government. This would require constitutional sanction to be true, and in the meantime, we may expect to see much ingenuity exercised by the Federal Government, under the pretext of conserving navigation, both in wise restriction of private water power enterprises on navigable streams, and in some manner contributing to the success of other power developments whose beneficial effect will be sufficiently far reaching.

To the Southern States such considerations are all important, for a large part of its immediately available water powers are on navigable streams, and already on two of her greatest rivers the development of power awaits favorable action by the Government relative to problems in navigation.

ADVANTAGES IN THE USE OF WATER POWER.

Water power is universally transformed into electrical power. Converted and transmitted as such, the horizon line within which it may be practically applied stretches away 100 to 200 miles from the hydraulic station, and with time and improvements, will be much farther.

The relative direct costs of power production by hydro-electric and steam plants are as various as the possible combinations of elements which enter into each and the places and peculiarities of power demands. For instance, where power is required at a uniform rate throughout a 24-hour day, as is the case in many milling and electro-chemical industries water power on account of its cheapness is the only possible source of energy. On the other hand, if the use of power is great and covers a period of ten hours daily, fuel is good and cheap, and high economy boilers and engines are employed, steam not infrequently may be used as cheaply as hydro-electric power, particularly if the latter is transmitted over a distance. In hydraulic plants where the natural delivery of the stream is relied upon without the aid of storage it may cost practically no more to develop than

a 24-hour horsepower than a 10-hour horsepower; while in the case of steam plants one may be double the other. A fair idea of the comparative direct costs of steam and hydro-electric power is conveyed in the statement that 11-hour steam power costs in the South within the ordinary range of fuel prices, effectiveness of different types of boilers and engines, hourly and monthly variations in demands for power, capacities of plants and effectiveness in management, $20.00 to $60.00. Hydro-electric 11-hour power costs correspondingly for generation and transmission $12.00 to $24.00. None of these figures represent extremes. The price paid by the customer per horsepower hour delivered by the hydro-electric company may be depended upon to be ordinarily 50 per cent to 75 per cent of the direct cost of its generation by the independent steam plant.

Critical analysis of the advantages accruing to the user of hydro-electric power is possible only in the light of industrial requirements governing modern manufacturing industries, where the absorbing ambition is to produce and market the maximum volume at the lowest cost per unit of product.

Hence we find differences in direct cost of power are relatively unimportant except in industries where the great use of power makes it a principal factor. Of greater importance are considerations involved in the application of power.

The use of electric power purchased of a distributing company is in consonance with that fundamental tendency of modern manufacturing toward the subdivision of labor and concentration on the fewest possible operations, removing the independent steam plant with its many complications from the solicitous care of those to whom power transformation is only means to an end.

The impossibility of restricting the delivery of hydro-electric power by adverse combinations of labor or capital affecting the source of energy and complete independence of railways and their physical limitations in the delivery of fuel

and the fixing of transportation rates therefor, contribute to certainty and uniform conditions of power supply. The elimination of the multitudious parts of a steam plant subject to incessant renewals make for a minimum of interruptions. A recording electric meter placed upon each significant operation of a mill enables that differentiation and comparison of activities necessary to an intelligent improvement in the economies of production. There is saving in ground and floor space, frequently not to be had in case of required additions to steam plants; ability at all times to meet increased demands for power without delay or measurably increased investment therefor, and no necessity for power plant extensions, the capacity and cost of which may be wholly out of proportion to the increased demands for power.

Soft coal smoke has been a necessary evil accompanying the blessings of prosperity. In industrial communities it vitiates the air and thus is hygienically bad, obscures the sun for days on end, thus depressing the spirits and the play of the imagination, and burdens the people with the support of the thousands of cleaners of one kind and another. We may never know to what civic pride might have attained, and in what exquisite homes, gardens, architectural structures, furnishings and decorations we might have expressed that pride, could they have been free from the black destructiveness of coal dirt. It is only those communities wherein "white coal" shall turn the wheels of industry that may hope to deserve the appellation of the "Sunny South."

COMMERCIAL LIMITATION OF WATER POWERS.

The business of transforming and distributing hydro-electric power is one requiring usually large investment, and is an extreme type of that class of enterprises in which the first investment is wholly out of proportion to the initial demand for the product and the resulting income. The operating expense, maintenance and depreciation of any plant are usually minor considerations, compared with the fixed inter-

est charges, and are practically independent of the amount of power generated and transmitted. These are the all powerful factors influencing the practices of water power companies and their relation to the public. Companies are forced to search for large power consuming industries to be installed coincidently with, or quickly following the completion of the power plant, and to such customers power is sold at extremely low rates to be balanced later by sales at higher rates for superior uses. Consequently, the effect is to introduce to the locality new industries and later those which consume their products or provide their wants, which, were it not for the presence of developed power, never would have become established there by any possibility.

Such conditions are the explanation of, and defense for, the contention that rates for the government of power companies should not be fixed by legislation. They also in part explain the advantages that result to the community by restricting the business of power generation in any section to a single company, for, without the promise of later high-priced business to support the large output of low-priced power, there would be no sufficient inducement for the projectors. With more than one company in the field this adjustment of rates would be difficult, if not impossible.

Interest on investment, sinking fund, management and depreciation are the chief and frequently the only measureable operating burdens, and all within wide limits may be independent of the amount of power developed and marketed. Consequently, the greater the output of power by any company, and as a corollary the fewer the companies in any field, the cheaper the unit of power can be produced and marketed.

Greater utilization of this exhaustless natural resource, conversely less waste; cheaper production and more reliable service are the merits which tend to make the single water power development a beneficial monopoly in any district, and it would seem as if natural commercial exigencies beyond

the control of the corporation guaranteed minimum rates for its patrons.

These severe limitations and very unusual conditions have made of water power development a business peculiar to itself. That this has been too little appreciated by the pioneers of the industry is well reflected by the statement of an officer, Engineer Corps, U. S. Army, that in his examination of water powers as investments, he never had found the man who for the second time was an investor in this class of securities.

It is hoped that Government officials whose co-operation is necessary to the development of water powers in the South will be keenly appreciative of these restrictive commercial peculiarities, and be governed accordingly, the fact being that to a great extent in the South, power enterprises, particularly the larger ones, must be exploited in regions where the industrial advantages are chiefly potential, and responsibility for the prosperity of the section rests upon water power development, the ability and determination with which it may be prosecuted.

PHYSICAL LIMITATIONS OF WATER POWERS.

Work is the product of force by the distance through which force acts. Energy is the ability to perform work. Force in the case of water powers is represented by the weight of the water, and consequently the flow, while distance is represented by the vertical space through which the water drops, and consequently the fall or head. The layman frequently analyzes the physical features of a water power no further than this, but these, to be practically utilizable, must possess many favorable attributes. The flow must be copious, depending on the area of the water shed and the amount of annual rain-fall. It must approach uniformity in some degree, secured by favorable seasonal distribution of rain storms, or by natural or artificial storage. The stream fall at the site of power developed should be great

within a limited distance. The topographical conditions at the power plant site should lend themselves to the construction of a regulating reservoir at least large enough to accommodate the day and night fluctuation, and to the construction of hydraulic works, such as dams, conduits, and tail races, within permissible limits of expenditure. Where regulating or storage reservoirs are a necessary feature of any development, the stream must not carry silt sufficiently gross to fill and encumber these.

Irregularity of flow, yearly and seasonal, is possibly the commonest and most discouraging limitation. It is low stream flow, as distinguished from average high flow that measures the amount of power which it is practicable to develop. Consequently, any characteristic of a water shed which may be utilized for, or contribute to, raising or extending the seasonal minimum, reducing the severity of drouth, has the highest possible value. Here intervenes the incalculable benefits of forests, for they are the greatest and practically the only natural reservoirs for rain-fall. Furthermore, by protecting and fostering soil covering, and withholding floods, they prevent the burdening of the streams with silt, thus contributing directly to the feasibility of artificial reservoirs.

Proximity of the water wheels to the place of application of the developed energy was the ancient limitation of a water power, the maximum distance being the span of a leather belt. Today it is fixed practically by only a single factor, namely, the permissible expenditure for an electric transmission line, the resistance and losses of which shall be within the limits of good regulation, say 10 per cent. One hundred and fifty miles is becoming an ordinary maximum. The projected enterprise on the Zambezi River, South Africa, contemplates transmitting from Victoria Falls to Kimberly mines, 600 miles.

We shall see later, in considering the attributes and distribution of Southern water powers, that as a rule they possess

favoring physical conditions to a remarkable degree, and though remote from centres of industry, we have the satisfaction of knowing that this handicap is one of degree, and growing yearly less restricted.

SOUTHERN WATER POWERS.

The Census Bureau reports as employed in all manufactures during the year 1905, 14,500,000 horsepower. The Secretary of Agriculture, in a late report, states that the estimated utilizable water power based on the minimum flow for six high water months without storage at 5,000,000 horespower on the streams proceeding from the Southern Appalachian Mountains, one-tenth of which has been developed. This by others is estimated to be equivalent to two and one-half times the presently developed water powers of the whole United States and half the total undeveloped utilizable water power, and probably even this vast amount of potential power could be doubled by storage. Assuming an average developable capacity of 1,250 horsepower, the Southern powers would number 4,000. It is clear that anything approaching a description of, or even a definite reference to, particular water powers, with such a vast number to deal with, is wholly impracticable in such a paper as this. The only suitable presentation is to analyze the broad distribution of these powers, and to treat any particular district as of importance only when such universally favorable conditions for the development and use of power exists as will probably determine the future industrial life of the region.

Water power sites may be said to have a habitat like wild animals. They may be searched for intelligently, as the sportsman hunts mountain sheep among the crags, bear in the canyon, elk and caribou close to the timber line on the long, powdery snow covered reaches of the plateaus. Geology bears the relation to distribution of water power sites, comparable to the effect of climate in determining the natu-

ral abode of wild animals. Rain-fall is comparable to the flora. The first thing that one is called upon to observe then is the structural geology of the Southern States.

The pracise sequence of changes in the borders of the ancient Inland Sea of paleozoic time cannot be determined. We know in effect that the ocean covered the eastern half of the South Atlantic States and that the shores of the Gulf of Mexico extended in a great horse shoe up the Mississippi Valley far to the north, and ultimately in its recession, due to local rising of the earth's surface, remained for a long period at the close of the paleozoic age in a great tongue whose tip rested about the present junction of the Mississippi and Ohio Rivers. Million of years of rock denudations during this period were washed into the sea, and further elevation of the surface in succeeding ages exposed these sea bottoms as the great modern plain of unconsolidated silt and gravel covering the Mississippi Valley country, the southern half of Alabama and Georgia and the eastern half of the Carolinas, the land of cotton. This old shore line can be traced today north and south through central Tennessee, then a great half moon curving symmetrically from the northwest corner of Alabama to the Georgia State line near the City of Columbus, thence northeasterly across Georgia and the Carolinas. Within this semicircular area thus formed are the Cumberland Plateau and the lofty Appalachians with their generous rain-fall, bordered everywhere with the Piedmont Plain. The waters flow from this birthplace of rivers west, south and east; tiny rivulets journey to make larger streams; these flowing together to make the great rivers, and everywhere these rivers come with great volume to the ancient shore line and descend off the older formations on to the younger, and here is where are to be found the greatest water powers. Far above these so-called "shoals" in the mountainous head waters the precipitous stream beds and small tributary water sheds account for numerous small powers. Below the shoals or "fall line" the

rivers in great volume flow placidly over the flat coastal plain and no powers are possible. The happy combination of great volume and ample fall occurs at the fall line.

From these considerations, it might be foretold that the Mississippi River south of the Ohio is not a power stream. As a matter of fact, there are no power sites south of Keokuk, Iowa.

The tributaries entering the Mississippi River from the West, where they lie within the Southern States, are almost wholly within the limits of the Inland Sea, and while favoring local conditions, due largely to accidental differences in the resisting power of contiguous formations, may give an occasional water power site, there are no universal opportunities for available water powers. Turning now to the eastern tributaries of the Mississippi, we may exclude the Ohio from consideration here, together with its network of streams above the confluence with the Cumberland and the Tennessee, because it barely touches the rim of the region under discussion, and does not present there any strong water power characteristics.

At the Cumberland, however, we enter the abode of water powers which includes all that great region above the ancient shore line, namely, southeastern Kentucky, eastern half of Tennessee, northeastern half Alabama, northern half Georgia, western half Carolinas and all Virginia save eastern portion. Within this area with their tributaries as a rule heading in the mountains and in part taking rise in the high plains which everywhere fringe the mountains are the great power streams, the Cumberland, Tennessee, Coosa, Tallapoosa, Chattahoochee, Ocmulgee, Oconee, Savannah, Saluda, Broad, Wateree-Catawba, Peedee, Roanoke and the James. These segregate naturally and by industrial requirements into three main power districts which may be termed Western, Southern and Eastern. The first is as yet wholly undeveloped and lies about the South's great iron and coal district, the seat of which is Birmingham, Alabama. The

second is already well exploited and lies along the Chattahoochee from Columbia, Georgia, north to Atlanta. The third is the most fully realized, a third of the easily available power being already developed. It lies in the favored agricultural district of northern South Carolina and southern North Carolina, stretching north from Columbia 200 miles. The Saluda, Broad and Wateree-Catawba Rivers are its principal sources.

The Cumberland's main stem in southeastern Kentucky and Caney Ford tributary in central Tennessee are good power streams. It is practicable to develop 20,000 to 30,000 12-hour turbine horsepower at a single site on each. Cincinnati, Louisville, and Chattanooga are 125 to 150 miles from one and Nashville, Huntsville and Knoxville 60 to 75 miles from the other.

The Tennessee River is synonymous with water power. Where the three great rivers, the Ohio, Cumberland, and Tennessee join, the Tennessee is credited with contributing from an area almost as great as England a volume of water as great as the Ohio and Cumberland combined. The topography of the upper water shed lends itself to the construction of numerous great reservoirs at permissive cost. According to the United States Geological Survey, this river and its tributaries, French, Broad, Little Tennessee, Clinch and others, possess a third of the available water power of the entire Southern Appalachian Mountains, beginning with the Potomac River on the east, and taking in all the great streams entering the Atlantic, the Gulf of Mexico, and the Mississippi, around to the Cumberland River on the west. In storage possibilities it possesses alone more storage capacity than all the other streams and their tributaries combined. The total potential power of the system estimated on the basis of the minimum flow for six high water months, during the past seven years, is 1,000,000 turbine horsepower. It is believed that practicable available storage will enable this to be more than trebled ultimately.

At Muscle Shoals, close to the fall line, in northwestern Alabama with tributary watershed of 29,000 square miles and 10,000 second feet minimum mean fortnightly flow, the river tumbles down 130 feet in 30 miles between high rock walls, a foaming, shallow mass of water one and one-half miles in width. The development and transmission of 100,000 24-hour horespower, delivered to the customer at a remote distance, is here practicable without stream regulation. With storage capacity to the amount estimated to be ultimately available, a total generator installation of 500,000 horsepower will some day be practicable.

The Tennessee River breaks through the Cumberland Plateau at Hales Bar below, and 13 miles from, Chattanooga, and here is now being installed a hydro-electric plant of 50,000 horsepower. A great number of valuable power sites are to be found on the tributaries of the Tennessee where they ramify and cover practically the whole western slope of the Southern Appalachians. A notable example is on the Little Tennessee, 40 miles from Knoxville, where an available head of 175 feet is securable, and an installation of 30,000 to 40,000 horsepower practicable.

One has only to follow the fall line between the cretaceous and older paleozoic and original crystalline formations, to encounter many valuable water powers in Alabama. These belong chiefly to the Alabama River drainage, emptying at Mobile, and are not all properly Appalachian streams, although for the most part, their sources are in the extreme southern slope of these mountains.

Wetumpka on the Coosa and Milstead on the Tallapoosa, 15 and 30 miles respectively from Montgomery, mark the intersection of these streams with the fall line, and for miles above occur the finest power sites in Alabama south of the Tennessee River.

The Coosa River above Wetumpka rises 367 feet in 142 miles, and the run-off data indicates that on the basis of a 60 per cent load factor, and without impounding more than

is locally practicable at the power house sites, the stream is capable of accommodating about 100,000 horsepower of generating machinery. However, any project here is complicated by the fact that the Coosa is a navigable stream and has been only partially dammed and locked by the National Government.

The Tallapoosa River has a water shed of nearly 4,000 square miles above Milstead. There are two power plants three and one-half miles apart working under a total head of 100 feet while seven miles farther above there is an available power site which by the erection of an impounding dam makes practicable a head of 120 feet. The opportunity here for storage is almost unexampled, and makes available within this short stretch of river, as the result of careful computation, based on many years stream gaugings, the great total of 100,000 11-hour horsepower transmitted to the consumer.

A mere summary of the physical conditions surrounding the Chattahoochee River are sufficient to indicate its possibilities. It crosses the fall line at Columbus on the boundary line between Alabama and Georgia, above which point it has 4,900 square miles of water shed, and a mean minimum fortnightly flow of 2,000 second feet. From West Point to Columbus, 35 miles, the river falls 362 feet, flowing for a large part between high rock walls relatively close together. Practically 50 per cent of the available power of the entire system may be developed on this section of the river. The strikingly favorable features do not end here, for 140 miles above West Point are admirable power sites, notably those in the neighborhood of Bull's Run. It is not astonishing then that this stream should be one of the best exploited of the South. The present installations employ 200 vertical feet. Columbus at the head of navigation, styling itself the "Electric City of the South," has many cotton and woolen mills. Atlanta relies chiefly on this river for its light and street railway uses. Geological Survey estimates credit the Chat-

tahoochee with 230,000 potential turbine horsepower on the basis of six high months minimum.

The Flint, Ocmulgee and Oconee Rivers cross the fall line in central Georgia, the two latter at Macon and Milledgeville respectively, have limited water sheds and do not take their rise in the mountains but possess relatively steady flow and good power sites. The former has shoals all the way down to Albany, where it is believed to cross a sub-fall line between the cretaceous and tertiary.

Georgia's eastern boundary, the Savannah River, is even a greater power stream than the Chattahoochee, forming a part of the State's western boundary. It leaves the archaic rock at Augusta, to which point is tributary 7,200 square miles of water shed, and a mean minimum fortnightly flow of 4,200 second feet. Augusta was at one time the third city of the Union in the use of water power, the municipality having begun its development as early as 1845. Today it is one of the great cotton manufacturing centers of the world, appropriating approximately 24,000 horsepower to this service. Seven miles above the city a 10-foot dam delivers to a canal which provides 45 feet head at the mills.

Within a distance of 93 miles above the dam, there are seven power sites on the main stream and tributaries, employing 383 feet of fall. A carefully studied plan for their utilization provides for installing generator capacity of 150,000 horsepower. Engineering skill of a high order prepared the project and it is interesting to note that the proposed installation of 150,000 horsepower is practically equivalent to the Geological Survey estimates of turbine horsepower on the same stretch of the river, based upon the maximum of six high water months, namely, 139,000 horsepower.

If we credit the Sanvannah River to the State of Georgia there is left as strictly South Carolinian only one great power stream, namely, the Santee. This is due to the fact that the fall line crosses the northwestern part of the State, intersect-

ing therein only the tributaries of this one Appalachian stream. The Pee Dee flows for the greater portion of its length in South Carolina, but enters the State only sixty feet above tide level.

The region from Columbia north for 200 miles, a belt of approximately 150 miles in width, including roughly equal areas in northern South Carolina and southern North Carolina, is at once the greatest water power and the greatest cotton manufacturing region in the South. Here are manufactured one-half of the southern cotton goods. Above Columbia, marking the fall line, there are 4,800 square miles of water shed on the Broad River, with estimated 130,000 turbine horsepower and 2,300 square miles on the Saluda, credited with 60,000 turbine horsepower. On the Broad at and above Columbia, 25,000 horespower is developed at three sites, on a total head of 80 feet, supplying cotton mills chiefly. Four new enterprises are projected, employing 180-feet head, for a total development of 60,000 horsepower. There still remain 250-feet head unappropriated on the main river with substantial area of water shed available. On the Saluda 25,000 horsepower is developed at six sites, with a total head of 200 feet, used by cotton mills far and near. Two new plants are projected for the development of 15,000 horsepower on an 80-foot head. Nearly five hundred feet of head as yet is unexploited within the limits of substantial flow.

Camden, the fall line of the Catawba or Wateree River, with 4,400 square miles tributary water shed, lies near the foot of shoals which descend 65 feet in six and one-half miles, capable without storage of development of 20,000 turbine horsepower. The stream above will be able ultimately to accommodate 150,000 horsepower of generating machinery without stream regulation, and one corporation alone owns five valuable power sites with 262 feet total head in this stretch, two of which have been developed for long distance transmission to the mills of the surrounding region.

There are left in the practicable portion of the river only 100 feet unappropriated.

The Yadkin River powers naturally should be considered in connection with the tributaries of the Santee just reviewed, for the reason that together with them, it is favorably situated to foster the same cotton mill section. Above Cheraw, South Carolina, the head of navigation, the river has a fall of approximately 600 feet in 120 miles. In this section occurs 80 per cent of the total developable power of the stream and tributaries, namely, 100,000 horsepower, minimum. In this section are the Narrows, which in some respects marks the most striking water power in the State of North Carolina. The Tar, Neuse and Cape Fear are not Appalachian streams and do not possess such strongly marked power characterictics as to warrant reference here.

At Weldon on the Roanoke are combined commercial and physical advantages which make this point one of great merit for power development. The tributary water shed is 8,200 square miles with mean minimum fortnightly flow of 4,000 second feet. The storage opportunities on the upper portion of the river and its tributaries are excellent. Above Weldon, the stream falls 84 feet in nine miles, and two companies have constructed hydraulic works covering practically the whole head, capable of developing 16,000 horsepower. The section of the Roanoke River between Weldon and Clarksburg, Va., at the junction of the Dan and Staunton Rivers, a distance of 70 miles, and a fall of 250 feet, embraces three-quarters of the power possibilities on the Roanoke River, and should warrant ultimately the installation of 100,000 horsepower of generating machinery.

The James River, in Virginia, is the remaining water power stream of strictly Southern significance. The best portion is immediately above Richmond, where, with a drainage area of 6,800 square miles, and a fall of 125 feet in 14 miles, one-third of the total power of the stream may be developed. At Richmond, under a head of approximately

25 feet, about 20,000 horsepower of generating equipment is installed. The topography of the water shed is favorable to the establishment of reservoirs, and this fact and the presence of many favorable power sites, and the excellent section of country through which the river flows, will no doubt combine to make the James one of the great power streams of the future, whereon may be realized the limits of its capacity, say 250,000 turbine horsepower.

The mountain tributaries of all such streams as have them possess many small and a few large power sites notably in Northern Georgia.

The water power region of the South is a vast empire, great in natural advantages. It is a land of opportunities in manufacturing as in agriculture. The productive capacity of the people is great when once they become industrial factors, but their numbers are few. The possibility, indeed the certainty, of development in the South, that many of us will live to see, is suggested in the following comparison between two great power sites, one where works of 100,000 horsepower are under construction on the Susquehanna River in Pennsylvania, the coal and iron State of the North, and the other on the Tennessee River, in Alabama, the coal and iron State of the South. Respectively they have 27,400 and 29,000 square miles drainage area, 610,000 and 508,000 second feet, flood discharge, 2,700 and 8,500 second feet absolute minimum, flow 50 feet and 120 feet net head available for the turbines, the one has torrential floods and no forests about the head waters, the other has relatively gradual rises and a forested water shed all to the relative advantage of the Southern power. But, in respect to the industrial conditions, a circle of 3,600 square miles about the Pennsylvania site includes over 2,000,000 people and 750,000 horsepower in steam plants, and a circle of 7,500 square miles about the Alabama site includes less than 350,000 people and 70,000 steam horsepower. In short the one section, as com-

pared with the other, employs 16 times as many people and uses 22 times as much horsepower per square mile.

Is this relative condition in the South to be interpreted as discouraging? No, for it will change and change rapidly. The South today compared with the rest of the country of 25 years ago is producing as much pig iron, mining twice as much coal, has more miles of railway, greater value in farm products, equal value of exports and 60 per cent as much capital invested in manufactures. Southern commerce has grown 56 per cent in five years. In this inevitable and swift industrial growth lies the message of Southern water powers to the world at large, for not only will their exceptional qualities speed this growth but the increase of industries will react to produce new incentives to the greater and still greater development of this great resource. Herein lies the interpretation of Southern water powers.

SECTION IV-A.

THE MINERAL WEALTH OF THE SOUTH.

DR. C. W. HAYES,
Chief Geologist, U. S. Geological Survey.

A mere enumeration of the economic minerals occurring in the South makes a formidable list and any adequate account of their distribution, extent, utilization and value would occupy a series of large volumes. I can therefore only touch upon certain salient features of distribution and emphasize some fundamental principles of economic utilization. Since the two elements of basic importance to the South's industrial progress, coal and iron, will be treated in separate papers, I shall refer to them only incidentally.

In order to appreciate the distribution of the mineral resources throughout the South the broad features of its geology must be kept in mind.

The area of the Southern States is divided into a number of dstinct geologic provinces each characterized by certain types of topography, rocks and structure and by the occurrence of certain valuable mineral deposits. These geologic provinces are shown on the accompanying map. They are:

1. Atlantic and Gulf Coastal Plain, including the Mississippi embayment.

2. Piedmont plateau and Appalachian Mountains.
3. Appalachian Valley.
4. Cumberland plateau.
5. Tennessee basin.
6. Ozark plateau.
7. Ouachita highlands.

1. Coastal plain. The inner margin of this division passes through the cities of Washington, Richmond, Columbia, Augusta, Macon and Montgomery, thence northward across the northeast corner of Mississippi, western Tennessee and Kentucky to the mouth of the Ohio, southwestward across Missouri, through Little Rock and Texarkana, and thence southewestward across Texas to the Rio Grande.

This great area embracing the whole of three States and portions of ten others is characterized by a nearly level surface underlain by gently dipping beds of clays, marls, and sands, for the most part unconsolidated and of comparatively late geologic age. It contains valuable clays throughout its entire extent; phosphates in South Carolina and Florida; bauxite in Georgia; lignites in Mississippi, Arkansas and Texas, and oil, gas, sulphur and salt in Louisiana and Texas. While ordinarily regarded as exclusively an agricultural region the aggregate mineral wealth of the coastal plain is very large and some of the individual deposits are of exceptional magnitude. For example, the Louisiana salt deposits are unequalled elsewhere in this country and probably are not surpassed for extent and purity anywhere in the world. In some of them the pure crystalline rock salt is known to extend to a depth of more than two thousand feet.

2. The Piedmont plateau expands southward from the Potomac, extending as a broad belt through Virginia, the Carolinas and Georgia, to its southern termination in Central Alabama. Its surfaces rise gradually from elevations of

about 500 feet at the margin of the coastal plain to 1,200 or 1,400 at its western margin, where it is terminated against the Appalachian Mountains. This range also expands southward from the Potomac where it forms but a single ridge and making a broad complex range in North Carolina, tapers off to a single ridge in Aabama. Both plateau and mountain range are composed of crystalline and metamorphic rocks of great geologic age, which contain the ores and minerals associated only with such rocks, as magnetic and specular hematite iron ores, gold and copper ores, pyrite, corundum, monazite, talc, graphite, marble and granite, and the series of useful minerals yielded by the granite, kaolinite, mica, beryl, tourmaline, rutile (in Virginia), zircon, etc.

3. The Appalachian Valley forms a belt of nearly uniform width immediately west of the Appalachian Mountains from the Potomac to Central Alabama. It is underlain by sedimentary rocks, sandstones, shales and limestones which have been intensely folded and faulted. This belt contains the most important of the southern iron ore and bauxite deposits and some lead, zinc, and manganese ores, as well as clays, marble and other building stones and cement materials.

4. Immediately west of the Great Valley belt is the Cumberland plateau whose surface, more or less dissected by stream channels, descends gradually from 2,000 feet above sea level in West Virginia to 500 feet in northern Alabama. This belt is broad in its northern part, narrows down in crossing Tennessee and expands in northern Alabama, where it terminates against the coastal plain. It is underlain by rocks similar to those of the Valley belt, but geologically somewhat younger, and the beds are for the most part approximately horizontal. This division is coextensive with the southern Appalachian coal field and contains perhaps the most valuable body of bituminous coal in the world. It also contains the oil and gas fields of West Virginia and part of the Kentucky oil fields, which extend into the next division to the west.

5. Extending westward from the Cumberland plateau to the Mississippi embayment is a broad area in Tennessee and Kentucky in which the rocks are nearly horizontal and consist largely of limestones. While this is primarily an agricultural region it also contains valuable mineral deposits, phosphate and brown iron ore in Tennessee and oil, lead, zinc and fluorspar as well as an important coal field in Kentucky.

West of the Mississippi embayment in Arkansas and Oklahoma are two divisions with characteristics similar to those of the Appalachian Valley belt and Cumberland plateau in the east.

6. The Ozark plateau occupies northern Arkansas and Oklahoma. Like the related Cumberland plateau it is formed chiefly of coal measure rocks and contains the great southwestern bituminous coal field. It also contains the oil fields of Oklahoma and the lead and zinc deposits of northern Arkansas, southern Missouri and Oklahoma.

7. South of the Ozark plateau and extending in an east and west direction is a belt of intensely folded rocks similar in character and structure to the Appalachian Valley belt. It includes the Ouachita and Wichita Mountains and adjoining valleys and contains the valuable Arkansas novaculites, deposits of asphalt, of antimony ore, and the problematic Arkansas diamond field.

This extremely brief summary of the geology of the Southern States is sufficient to indicate how wide a diversity in character of rocks and geologic structure the region possesses and that it contains a correspondingly great variety of economic minerals. It should further indicate the important fact that these minerals are distributed in this region, not at random, but in accordance with well recognized principles of geologic association and genesis. Each kind of deposit is found in certain associations and need not be sought elsewhere.

Thus the accumulation of oil and gas in sufficient amount

to be commercially valuable is dependent on conditions found only in regions where the strata occupy approximately the original horizontal position in which they were laid down and are not broken by folds and faults. Such conditions are found in the coastal plain and the Cumberland and Ozark plateaus, and here the oil is found. It is worse then useless to search for oil in the crytalline and metemorphic rocks of the Piedmont plateau, or in the intensely folded and faulted rocks of the Appalachian Valley.

On the other hand, veins of gold and copper ores are found only in the crytalline rocks and are therefore confined to the Piedmont plateau and Appalachian Mountains.

Again, it is the universal experience the world over that in the evolution of the globe coal was not formed in sufficient abundance to make commercial deposits until the upper carboniferous rocks were being laid down. Hence, workable coal beds need not be sought in rocks known to be older than the Carboniferous period.

In short geologic investigation of a region serves to indicate the areas within which certain minerals and ore deposits may be expected to occur and within which certain others need not be looked for. These statements may appear to belong in the kindergarten and entirely too elementary for statement in this place, but one who has seen the fruitless search for mineral deposits where they could by no possibility occur, as every field geologist and mining engineer has seen it, must realize that these fundamental principles cannot be too often repeated.

The position which the South occupies in the mineral industry compared with the rest of the United States is indicated by the accompanying table in which is given the quantity and value of various mineral products for the years 1906 and 1907, and the percentage of the entire production derived from these States.

A study of this table brings out a number of important and suggestive facts.

The first of these is the great variety of the mineral products. Thirty-four are listed in this table as produced in commercial quantities. The only important mineral products of the United States conspicuous by their absence from this list are anthracite coal, borax and aluminum. Concerning the latter I shall speak in another connection.

The second notable fact is the number of important products of which the South has a practical monopoly. Among these are bauxite, the ore of aluminum, which has thus far been found in commercial quantities only in Tennessee, Georgia, Alabama, and Arkansas; sulphur, which is produced with such ease and in such enormous quantity from the Louisiana deposits that it has completely driven the Sicilian product from the market; phosphate rock, which except for the recently discovered and wholly undeveloped deposits of Utah and Idaho is known only in the Carolinas, Florida and Tennessee; monazite, the mineral from which are obtained the rare elements necessary for the manufacture of forty million incandscent mantels annually and which occurs only in association with the crystalline rocks of the Southern Appalachian Mountains. Other minerals of which the production is practically confined to the South are asbestos, Fuller's earth and manganese ores; while the Southern States produce more than one-third of the natural gas, petroleum, fluorspar, pyrite, barytes, asphalt, mica, talc and soapstone.

It is apparent from this brief review that the South is endowed both in variety and abundance of its mineral wealth far beyond any other section of the country. Detailed information concerning the location, character, extent, and value of these mineral deposits is available in the reports of the Federal and State Geological Surveys, and may be had for the asking. Without enlarging upon this subject therefore we may turn to questions bearing on the utilization of these deposits.

The problem which presents itself for solution to the in-

dustrial South is the development of its natural resources in such a way as to secure a maximum of results in general prosperity and material well being. The true solution of the problem implies not merely the immediate massing of a few swollen fortunes at the expense of posterity, but the building up of a sound and enduring industry. The length of productivity of the various useful minerals is therefore a consideration of prime importance. From this point of view they fall into two classes. In the first are such substances as clay, limestone, marble, granite, sand, cement materials, etc., which occur widely distributed as important constituents in the earth's crust and which may, for all practical purposes, be regarded as inexhaustible. At least, no easily conceivable rate of production will ever appreciably diminish the visible supply. The second class includes those ores and minerals which are relatively rare and occur in commercial deposits only in very restricted areas, as iron ores, bauxite, gold and copper ores, and rock phosphate, or if occupying large areas, as beds of coal and iron ore, are relatively thin. The total available contents of any deposit of this second class is strictly limited and although this total may be expressed in millions of tons, the term *inexhaustible* can never properly be applied to them. The ill-considered use of this term should be severely discountenanced for it tends to breed extravagance in their exploitation and excuses the too prevalent wasteful methods of development. The ultimate exhaustion of all mineral deposits of this class must be expected and discounted in advance. To foretell the date at which any group of mineral deposits will be exhausted, however, is a difficult matter, for several reasons.

In the first place, it is impossible to make reliable estimates of the total content of the deposits. The degree of accuracy attainable varies widely with the nature of the deposit. It is closest in case of those which are regularly bedded such as coal and some forms of iron ore where, even in advance of thorough testing, it may possibly come within ten per cent of

the truth. On the other hand, in case of vein and pocket deposits, by reason of the irregularity of their shape and the uncertainty of their extent underground, the most carefully made estimate may be several hundred per cent out.

In the second place it is impossible to forecast with certainty the future rate of consumption. This forecast must be based on rate of consumption in the past. The accompanying diagrams show graphically the production of pig iron, coal, petroleum, phosphate rock and bauxite in the Southern States up to and including 1907.

The most striking feature of these diagrams is the rapid rate of increase in production. In the case of coal it amounts to a doubling of the production each decade. It is evident that with a known amount of coal or other mineral in the ground the date at which it will be exhausted may be calculated on the assumption that the present rate of consumption will remain constant or on the assumption that the past rate of increase will continue. The first gives the coal fields of the country a life of something over two thousand years and the second about 180 years. But a very little consideration shows that neither of these assumptions can be correct; that the probability lies somewhere between these two extremes, for it is practically certain that production in all branches of the mineral industry will continue to increase for a long time but that this increase will be at a gradually diminishing rate. However this may be, the fact must be kept in mind that none of the more valuable mineral deposits are inexhaustible and that once exhausted they can never be replenished. The most elementary principles of self-preservation therefore are involved in the proper utilization of these resources.

Conservation of natual resources and prevention of waste have of late come to occupy a prominent place in popular thought and no one welcomes this movement more heartily than those who have been engaged in studying the mineral resources of the country. But the ideas of the new crusade

have long been familiar to them, and the warnings against a prodigal waste of these resources have been repeatedly urged upon an inattentive public. With the awakening of an enlightened public opinion intelligent efforts may be made and great results may be expected, not in the direction of hoarding these resources but of economical utilization.

The first efforts should be directed toward the prevention of actual waste of valuable mineral resources. Among the most flagrant and inexcusable wastes now going on unchecked is that of natural gas. This is the ideal fuel stored in the earth ready for man's use, but it is also the one most liable to waste through careless methods of development. As a concrete example, take the case of the Caddo field in northwestern Louisianaa. Through the careless and unskillful methods of drilling employed several wells have blown out and are now pouring into the air between seventy-five and one hundred million cubic feet of gas, or over 1700 tons each day. When it is considered that conditions in this field are growing worse instead of better, that the same careless methods are still in use by many drillers, and when the actual money value of this fuel, which is equal to more than one-twentieth of the total natural gas usefully consumed in the United States, and the value of the industries which it might support are computed, the case becomes appalling in its magnitude. The fact that there is no present market for this gas is no excuse for its waste. Public opinion, even in the absence of needed legislation, should compel a development of the field which will preserve the fuel until industrial conditions are such that it can be utilized as fast as produced. Local opinion, however, not only does not discountenance this waste but it is encouraged by the oil men both because the gas pressure is troublesome in drilling and because of a totally erroneous idea that a reduction in the gas pressure will increase the yield of oil. The effect will in all probability be exactly the reverse and the reduction of the pressure will be followed by an influx of salt water entailing a

partial or complete loss of the oil field. Louisiana is in the early stages of the experience through which Ohio, Indiana, Kansas, and other of the older gas-producing regions have passed. There is first prodigal waste, accompanied with the insane belief that the supply is inexhaustible, then a slowly awakening realization of the value of gas as fuel, and the limited amount present in any field, with the development of industries in which it can be utilized and, finally, the careful conservation of the remaining deposits accompanied with vain regrets for the former high pressure and the abundant supply which has been thrown away. Some palliation may be found for the waste which occurred before the value of gas as a fuel was realized or methods for its utilization devised, but these excuses can no longer be made. No word can be applied to it now but *criminality*.

Another serious economic waste is involved in the development of mineral deposits where the raw product is shipped a long distance to market. The freight is apt to equal or exceed the value of the product at the mines, and under such circumstances only the highest grade product can be shipped. This generally involves the throwing of the lower grade material into the dump where it is lost, or leaving it in the mine where it can be recovered only with difficulty if at all. An example of this method is seen in the working of the Tennessee phosphates. Enormous quantities of rock containing fifty per cent of lime phosphate have been thrown away because the export trade demanded from sixty to seventy per cent. But it requires no prophet to foresee the time when twenty-five per cent rock will be considered valuable and utilized.

How can these economic wastes be prevented? It seems to me there are three ways which give most promise.

First and most important is the development of local industries by which the finished product rather than the raw material shall be shipped; second, the development of an enlightened public opinion that will insist upon the econom-

ical development of resources on which general prosperity depends; and third, legislation by the States for the control of development where the acts of the individual affect the general welfare.

It may be regarded as a fundamental economic principle that a country is impoverished by exporting raw materials. Mineral in the ground has a value only equal to the royalty which it will yield and in case of ordinary mineral deposits this rarely exceeds ten per cent of the value of the mined product and a very much smaller per cent of the value of the finished product ready for consumption. The real value of mineral deposits therefore is potential rather than actual. They form the basis for industries which may add enormously to the wealth of a region but they only impoverish it if shipped elsewhere for manufacture. Let me give a concrete illustration of this economic principle.

It has already been stated that the mineral bauxite is found in commercial quantities in the United States only in the South. This mineral forms the basis of three important industries, the manufacture of metallic aluminum, of alum, and of alundum or artificial corundum. Since the mining of these deposits began in 1889 up to the close of 1907 about 540,000 tons of bauxite have been produced in Alabama, Georgia, Tennessee, and Arkansas, having a value at the mines of $2,200,000. During the same period, the value of the aluminum, alum and alundum produced in the United States has been about $60,000,000. Twenty per cent of this has been produced from imported French ores and the remainder from Southern ores. In other words, a product having a value of $2,200,000 at the mines has been converted into products valued at $48,000,000 in its manufactured state. Considering the bauxite which is used in the manufacture of metallic aluminum, one ton of ore having a value at the mines of $4.00 yields metal valued at about $178.00. This difference of $46,800,000 repesents freight on raw material, labor, plant, power and profit.

If the finished product had been produced near the source of the raw material the item of freight would have been practically eliminated, the items of labor and plant would certainly not have been increased, and the item of power would have been reduced if the available and unused water powers of the South had been employed. It follows therefore either that the finished product would have been greatly cheapened or that the profit on capital invested would have been increased, probably both results would have followed and more important than either the South would now have a series of established industries instead of worked-out and abandoned bauxite mines.

Still further, the establishment of industries near the supply of raw matrials enables economies to be introduced which are otherwise impossible. For example, the manufacturers of alum in Illinois and Pennsylvania demand a certain grade of ore, containing a minimum of impurities since the lower grades will not bear the cost of transportation. Thus the silica must run below 10 per cent since silica, while not otherwise injurious, is so much dead weight on which freight must be paid. But there are large amounts of ore in most of the deposits which contain more than the allowable percentage of silica. These ores are therefore not marketable under present conditions and they are left in the mine or thrown into the dump. If, on the other hand, the plant for the manufacture of alum were located near the mines this low grade ore could be utilized and the average cost of mining greatly cheapened. Such location would be further highly advantageous as affording a demand for the sulfuric acid which can be made cheaply as a by-product from the roasting of sulphide copper, lead and zinc ores, produced in the immediate vicinity of the bauxite deposits. In some cases, as at Ducktown, Tennessee, the copper producers have been compelled to convert their sulfur fumes into sulfuric acid even in the absence of a market for this valuable product. Still further there is a large and growing demand

in the South for alum in the paper trade and for sewage purification and this must now bear double freights, first on the raw materials and second on the manufactured product back to the locality of its origin.

Let me take another example. Louisiana with adjacent portions of Texas and Arkansas contain extensive deposits of sulphur, salt, limestone, gypsum, bauxite, manganese, oil, natural gas, and coal. These are the raw materials on which the principal chemical industries of the country are based. But there is no chemical industry in Louisiana, Texas or Arkansas. Instead, these raw materials or such of them as will bear cost of transportation are mined and shipped to other parts of the country where the industry is already established and where there is resulting industrial activity and prosperity, although the conditions are very much less favorable than near the point of supply of the raw materials. Indeed, it is difficult to say in what respect natural conditions could be made more favorable for such an industry than in the region lying between New Orleans, Little Rock and Houston. There is probably no form of industrial activity which adds so much to the wealth of a country with so little drain upon its natural resources as the various chemical manufactures which convert such relatively cheap materials as sulphur, salt and limestone into valuable chemical products. The soda industry alone is worth many million dollars annually to Michigan, Pennsylvania and New York, and it is largely due to the development of chemical industries that Germany holds her commercial supremacy among European countries.

These are merely isolated examples and many others equally impressive might be cited, but all point the same moral, that the effective and economical utilization of the South's mineral wealth can be brought about only by conversion of raw materials into the finished product in the South itself. The present policy may increase railroad tonnage and add to the industrial development of other parts of the coun-

try but it is "robbing Peter to pay Paul," and while I have nothing whatever against Paul, who is quite competent to look after his own interests, I protest against the continued robbing of Peter, particularly when the process involves clubbing him into a condition of insensibility.

To summarize very briefly, there are three points which I wish especially to emphasize.

First, the South possesses mineral deposits of great variety and value, many of them wholly confined to this region and others unequalled in any other part of the country.

Second, no ore deposits are inexhaustible and hence wasteful methods of mining and utilization are criminal and should be controlled either by an enlightened public opinion or by State legislation backed by public opinion; and, finally, these mineral deposits are potentially rather than actually valuable and their full value is secured only in so far as they form the basis for local industries, while to export the raw materials means impoverishment.

Mineral Production of Fourteen Southern States and Percentage of Total Production of the United States.

Products	1906 Quantity	1906 Value	1906 Per Cent. of Total Production	1907 Quantity	1907 Value	1907 Per Cent. of Total Production
Pig Iron, long tons	3,080,507	$54,776,321	10.8	3,033,388	$56,175,000	10.6
Iron ore, long tons	6,238,559	8,905,399	8.9	6,304,027	8,872,852	6.7
Bauxite, long tons	75,332	368,311	100.0	97,776	480,330	100.0
Gold, ounces	10,990	227,200	0.2	12,038	239,870	0.3
Silver, ounces	328,300	222,223	0.6	385,361	254,338	0.7
Copper, pounds	18,460,210	3,562,820	2.0	20,153,751	4,030,751	2.3
Lead, short tons	55	6,270	0.1	604	64,024	0.2
Zinc, short tons	3,411	416,142	1.7	3,956	466,808	1.8
Coal, short tons	80,075,362	85,831,313	22.5	92,939,865	106,141,107	21.3
Natural Gas	----------	14,656,701	31.3	----------	17,669,935	33.4
Petroleum, barrels	50,979,908	35,245,338	38.1	70,763,185	48,693,244	40.5
Clay products	----------	20,148,494	12.5	----------	21,768,828	13.7
Cement, barrels	1,804,643	2,397,237	4.3	1,814,470	2,221,305	4.0
Slate	----------	182,857	3.2	----------	182,170	3.0
Stone	----------	7,851,610	11.8	----------	8,646,463	12.2
Lime, short tons	510,095	1,852,678	14.8	475,250	1,825,549	14.4
Glass sand, short tons	166,493	235,265	19.5	187,827	241,362	19.3
Sand, molding, etc.	3,936,012	1,805,010	15.7	4,345,573	1,880,194	14.2
Fluorspar, short tons	12,228	81,602	33.4	21,058	133,971	46.6
Phosphate Rock, long tons	2,076,457	8,552,437	99.7	2,258,770	10,630,524	99.8
Pyrite	154,967	510,205	54.8	153,021	457,893	57.6
Sulphur*	----------	----------	97.3	----------	----------	98.3
Salt, barrels	2,647,655	545,985	8.2	1,670,654	530,869	7.1
Barytes, short tons	21,362	66,888	41.7	45,582	129,318	44.3
Gypsum, short tons	269,700	804,088	21.0	301,611	885,456	17.9
Mineral Paints, short tons	11,532	111,905	5.2	12,692	127,468	4.3
Asbestos, short tons	738	13,000	46.0	653	11,899	100.0
Asphalt, short tons	33,095	371,801	28.8	72,074	1,043,092	36.9
Fullers Earth, short tons	30,200	243,500	91.7	31,891	281,173	96.4
Manganese, long tons	6,120	78,112	88.6	5,504	62,769	99.1
Mica: Sheet, pounds	800,440	221,696	80.6	714,040	263,999	67.3
Scrap, short tons	1,229			2,194		
Monazite and Zircon, lbs.	847,275	152,560	100.0	548,152	65,800	100.0
Talc & Soapstone, sh. tons	29,493	682,239	47.7	31,102	717,700	46.9
Mineral Waters, gallons	7,846,858	1,404,531	17.5	9,467,394	1,464,517	20.0

SECTION IV-B.

COAL.

PROF. L. C. GLENN.

See Contents for Page.

SECTION IV-C.

THE SOUTHERN IRON INDUSTRY.

EDWIN C. ECKEL, *Washington, D. C.*

Thirty years ago had a convention met to discuss Southern industries it might have fairly expected to hear an enthusiastic presentation of the vast possibilities of the South. At that date the South was at the beginning of a period of rapid growth and expansion in her iron trade which, for a time, bid fair to create a distinctively Southern iron industry. Today much of the promise of those days has been accomplished yet the result differs in some striking ways from what might have been expected. We may, therefore, more fitly devote a little time to taking stock of the progress that has been made, and to considering where we must apply our efforts if we are to hope for greater progress in the future.

The first thing we can note is that the progress has not been as rapid as was expected, for contrary to a very general impression, the development of Southern iron resources has not kept pace with that of the rest of the country.

While the South produced in 1854 almost exactly 12 per cent of the American total, in 1880 her production had fallen to barely over 6 per cent. From this year on a relatively rapid increase in Southern output carried the percentage to 18 in 1891, to 18.72 in 1893, and finally to a maximum of 19.09 per cent in 1896. Since 1896, though the Southern output has increased quite regularly, the increase is small compared with that shown by other sections. The result is that the Southern output is steadily becoming of less relative importance, the percentage having fallen off until during the first half of 1907 it was barely over 10.5 per cent—considerably less than in 1854.

The decrease in relative output, though very gradual, has unfortunately been very steady, having encountered no serious reversal of direction since 1896 and no reversal at all since 1903. So far as can be estimated now from the new furnaces known to be in course of construction, there is no probability that the present trend will be changed in the near future. Unless business conditions should change materially, the Southern iron output of 1908 and 1909 will probably not amount to more than 9 per cent of the total American production.

The first fact to be noted, therefore, is that the development so far accomplished still leaves room for much further progress. There is little room for doubt that the next decade will witness much of this advance, for technical and commercial considerations are combining to render the South relatively more satisfactory as a manufacturing district. Accepting this, it will be of profit to consider what are the strong points and the weak points, respectively, of the South as an iron center.

The iron trade of today is based upon the combination

and interrelation of four factors or essential elements—raw materials, labor, brains and money. Of these four requisites, the South has been favored by Providence with an abundant supply of raw materials, and by man with an abundant supply of labor. On the other hand, though the South today is not deficient in either intelligence or wealth, it is an obvious fact that neither Southern brains nor Southern money are interested, to any large extent, in the development of the Southern iron industry.

The extent to which this statement is true, and the manner in which it has come about, may be understood best if we examine the way in which each of the essential factors influences the course of iron development.

1. The first element which comes to mind is, invariably, the matter of raw materials. In this respect the South has been exceptionally favored, not so much in the grade of materials available, but in their total quantity, in their ease of extraction, and in their cheapness of assemblage. The miles over which the ore and coke of Pittsburg, Buffalo, Gary and Pueblo are carried to reach their furnaces are reduced to yards at Birmingham. In these regards the glowing prospectuses of thirty years ago fell far short of portraying the real wealth of Alabama; while Georgia and Tennessee have not proven unworthy of their early champions. Among the States then hailed as future iron centers, Virginia alone has failed to take rank according to her earlier promise.

2. When we come to consider the second requisite of the iron industry—an adequate and satisfactory labor supply—we must of necessity confront one phase, and a very important phase, of the eternal race problem of the South. In most of our iron districts we have, at present, to deal with negro labor, and with negro labor only, for the meager supply of white laborers furnished by the mountain countries can hardly be considered a serious factor in the situation today.

In all the wordy war that has raged over the political and

social status of the negro, little attention has been paid to his industrial status. Neither the philanthropists nor the politicians who carried on this interminable discussion had much interest in the question of labor, or in the relations of labor to industry. There were neither votes nor contributions to be gained by agitating that side of the matter, so it was let alone.

To those of us who are interested in Southern industrial development, however, the question cannot be so lightly passed by. Of course opinions on the subject are affected chiefly by personal experiences, but I think that most of you who have worked labor-crews of different colors and nationalities will agree that for sheer ability to withstand hard work, and for cheerful willingness to work under trying conditions, it would be difficult to put together a better laborer than the negro. One hundred years ago this might not have been true, for then American white men might still have been induced to do such work. Fifty years ago the case might still have been doubtful; for all of our Irish visitors had not yet exchanged the pick and shovel for the policeman's baton. But today, bearing in mind that our choice is between Slavs, Italians and negroes, I think there can be little question as to our conclusion.

Against this basal strength, stamina and cheerfulness which the negro possesses, two serious defects must be put into the balance. I think that on this point also we find fairly universal agreement. The first defect charged is that, as a whole, the negro race does not take intelligently to the handling of machinery. There are brilliant exceptions to this, however, and even at the worst it is questionable if his substitute, a Slav, would handle such work more intelligently. The second defect, which during our late period of prosperity brought the Southern iron trade almost to the verge of demoralization, is that increased pay does not induce the individual laborer to do more work but, on the contrary, is accepted as a good reason for doing less work.

This failure to respond to a financial incentive is a serious matter, for it means that when times are good the payroll at any mine or furnace must carry three or four times as many men as are really required to do the work. My own opinion is that this defect is not to be regarded as a permanent racial characteristic of the negro, but as marking simply one stage in the industrial development of the race. In the iron districts of Virginia, for example, I think that the negro has advanced considerably, in this respect, beyond the status of the Birmingham laborer. In this connection it might fairly be added that some of the Alabama camps retain the "company store" or "commissary" in all of its old-time effectiveness as an agency for separating the laborer from his pay. The commissary is hardly an inducement to saving, and it is doubtful if the economy preached and practiced by some of our present millionaires would have carried them very far had they been compelled to deal with a company-store in their early days.

The alternatives to negro labor are few, for we have no satisfactory supply of native white labor to draw on. We may induce emigration, or, in some limited localities, we may employ convict labor. As for the first alternative, it seems doubtful whether the class of emigrant we can now secure is likely to be a permanent advantage to the State. Pennsylvania supplies an example, hardly attractive, of the effect of inducing heavy immigration of the lower European races.

As for convict labor, that may, fortunately, be touched upon very briefly. I cannot easily forget the sickened horror with which I first saw this system at its worst. Looked upon as an economic factor, convict labor is bound to be finally eliminated from our industry, whatever tardy state legislatures may do. Unless convict labor is cruelly handled, it is ridiculously ineffective; and the iron industry of today has no room for inefficient labor.

The southern iron industry, then, must in the future as in the past, except to deal principally with negro labor. It must

be frankly recognized that this is not, at present, efficient; that the labor cost today is higher proportionately at Birmingham than at Pittsburg. To lessen this inefficiency will demand more work on the part of the employer, and more rigid supervision of all labor details, than if the negro was naturally more responsible. The company will have to interest itself in things which ordinarily, in other parts of the country, might safely be left to the men.

3. The two factors so far considered—raw materials and labor—must be accepted as they exist at present, for human effort could do little to alter them. With regard to the third requisite of the industry—brains—this is not true; for though we can not easily increase the amount of natural intelligence available in any State, we can at least see to it that this intelligence is made available industrially through proper education.

The main characteristic of the American iron industry of today, as compared with that of fifty or even thirty years ago, is the extent to which technical training is required in the control of its different phases. With increasing specialization, with increasing reliance on the chemical laboratory at the furnace and the testing laboratory at the mill, with increasing strain on both the technical and the administrative sides of the work, it is becoming increasingly evident that a preliminary technical training is now almost essential to success. It is, of course, possible that in the future some ragged breaker-boy may still rise to become President of the Steel Corporation, but the chances are certainly against it. If today we chose to occupy ourselves somewhat fruitlessly in wondering who would be the Steel Corporation's head in 1940, we would probably have the chances in our favor if we decided that he is now studying at one of the four or five leading engineering schools.

Now, just at this point the matter takes on a sectional aspect. If a young Southerner desires a good legal training, he can secure it readily enough in the South; if he wishes to

become a physician, he need not go farther north than Baltimore at any rate; if he feels a calling to the pulpit, he can pursue the proper studies at any one of several hundred religious institutions, teaching an infinite series of shades of belief. But, if he hopes to become an engineer, he finds that today there is not an engineering school of the first rank anywhere in the South, and that even second-class technical schools are few and far between. In regard to civil engineering, things are not so bad, but in mining, mechanical or metallurgical courses a Southern college is about as deficient as can well be imagined.

Part of this condition is due to the lack of funds, and part to the foolish ways in which funds are misapplied. In almost every Southern State, for example, there is an undignified and unending squabble in progress between the "State University" and the "State Agricultural School." These institutions compete, not to see which can do the most good to the State, but to see which can wheedle the larger appropriation from the legislature. The result is that the State, in place of having one good college, has two poor ones, with inefficient duplication of work and cost.

A good technical school is necessarily expensive, both for its foundation and for its maintenance. Its equipment costs far more than that of the ordinary college; while its faculty, in a region of active demand for engineers, such as is the South today, must be paid on a very different scale. But when the quality of its output is considered, a first-class technical school easily justifies its high initial and maintenance costs.

4. In naming over the four requisites of the iron industry, money was mentioned last, not because it was the least important, but because it had the least bearing on the subjects we are discussing today. The South is now a wealthy region, but Southern capital does not seek investment in the iron industry. It is of course difficult to give even approximately accurate figures on the matter, but it seems safe to

say that, of the total securities issued by iron and steel companies now engaged in the development of Southern resources, less than five per cent are owned by Southerners. The effect of this condition is to deprive the iron industry of Alabama, for example, of the hearty local support which it can always count on in Pennsylvania. This becomes very evident at periods when corporation hunting is a legislative amusement, when serious tariff changes are under discussion, or when labor questions may require State intervention.

From this summary, it must be evident that the Southern iron industry has attained its present status purely because of the superb natural advantages of the South in that line, and not because of artificial aid or enthusiastic local support. In the next decade we may reasonably expect to see the iron trade of the South increase out of proportion to its growth in the rest of the country. This must become particularly noticeable as our export trade in iron and steel products expands; for certain Southern ports are the logical points of departure for this trade, while Southern furnaces and mills are the natural points of origin. The outlook for the future is brilliant, and it would be a misfortune if the South should take merely a passive part in this development.

SECTION IV-D.

BUILDING MATERIALS OF THE SOUTH.

WILLIAM J. OLIVER.

In accepting Mr. Dawe's invitation to address you on the question of building materials, I did so with a full understanding of the honor thereby conferred, and also with a due regard for, and appreciation of, the wide scope covered in this subject. Owing, therefore, to the extensive ramifications of the subject assigned to me—for under the heading "Building Material" is included every article used in constructive work—I cannot do full justice to so important a factor in the South's future growth in one brief address, but can only attempt to bring out the salient points bearing upon the matter in relation to their influence on the South's progress.

My construction of the purpose for which this Honorable Body was called to convene in the Nation's chief city is for the exploitation of the manifold natural advantages and resources which our section of the United States enjoys over all other sections.

Every intelligent American citizen concedes that the South's opportunities for development, in almost every line, are unsurpassed, fully realizing as they do that it is only a question of time when our section of the country will rank ahead of all other sections in the items of production, transportation and commercial importance. But have we not a tendency to procrastinate in taking hold of our advantages and developing the wonderful resources with which Nature has so kindly endowed us, and which so eminently qualify our beloved Southland to take its rightful place at the head of the Nation's commercial enterprises? Not that we have not grown in a marked degree and in a manner to excite the admiration and wonder of our sister States, and even of the world, but has not our attitude been one of contentment in the knowledge of our versatile accomplishments and acknowledged unsurpassed, though undeveloped, natural resources?

Truly, "there is no time like the present" for us to shake off our lethargy and direct our attention to the upbuilding of a section of the country, than which for the pursuit of practically all vocations, there is none better anywhere in the Universe. And who is better able to promote this movement than the representative body of citizens herewith assembled—coming as they do from all parts of the South? We want strong men; men who are not afraid of hard work; men who fully appreciate the paramount importance of co-operation, unity of purpose and eradication of petty strife and business warfare which has, to some extent heretofore, characterized the South's modus operandi. We want zealous men who realize the necessity for community of interest and who stand ready and willing to sacrifice to a not inconsiderable degree their time and attention for the creation of nobler ideals, more praiseworthy ambitions and the urgent necessity of a sound foundation on which to build up a new South.

THE CEMENT INDUSTRY IN THE SOUTH.

Undoubtedly those of the Southern States physically qualified to produce cement present all the natural advantages looking to the production of this commodity as do the States which are the chief producers now. Certainly the area of cement producing lands is as great in the South as elsewhere, so that the relative importance of the industry is entirely dependent upon the amount of cement produced. Then, if one locality is as well qualified to carry on this branch of the country's business as another, is there any reason for failure to grasp the opportunities offering? To a large extent that is just what we are doing; and there isn't any excuse for it either. Not now. Portland cement (so-called because the process used in the manufacture of that brand of cement was first tried out near Portland, England) is more universally produced than either the natural cement or that manufactured from a mixture of limestone and blast furnace slag. The difference between the Portland and natural cements is only in the manufacturing processes used.

The determination of the value of Portland cement manufacture depends upon a number of distinct factors entering into the production of that commodity, namely:

1st, Chemical composition of the material;
2d, Physical character of the material;
3d, Amount of material available;
4th, Location of deposit with respect to transportation lines;
5th, Location of deposit with respect to fuel;
6th, Location of deposit with respect to markets.

To say the least, this industry is a complex one, and should be studied from every side before venturing upon manufacture.

Localizing, we have the right sort of limestone, marl clay

and shale; it is situated so as to make the mining thereof easy, and there is a plentiful supply of it. Then the location of the deposits, both with respect to transportation and fuel, is all that could be desired, and, in addition, we have a steady market for the output right at home, although the South buys yearly many thousands of barrels of cement from Eastern manufacturers, showing conclusively that even though the Southern States have assumed an important position in the conduct of the country's business, both as producers and consumers of building material, we don't begin to manufacture enough cement for our own use.

Of course the Portland cement industry has the same tendency towards geographic centralization, though to a less degree, that has given Pittsburg its pre-eminence as an iron producer. In the case of the Portland cement industry, the concentration of plants is in the so-called Lehigh District of Pennsylvania, with its New Jersey continuation. In Eastern Tennessee and Northern Alabama there is found the greatest range in the variety of limestone and through the valley of Eastern Tennessee and Northern Alabama there are limestones containing all the necessary elements for the manufacture of natural hydraulic cement, while the purer carbonates generally associated with beds of shale supply all the material for the manufacture of true Portland cement. But the great belt of limestone follows the trend of the valley between the Blue Ridge and the Cumberland Range of mountains from the Northern part of Virginia well down into Alabama, with some deposits in Mississippi.

Now that it has been shown that in point of character and amount of material essential to the carrying on of the cement industry the Southern States are so well adapted to become the leading producers of cement, what then remains to be done in order that the prospective manufacturers of this article may be assured of success in the undertaking? In the first place, the ingredients must be properly mixed

and ground before burning, and, after this process, the resulting clinker must be finely ground, paying due regard to the proper temperature at which the burning is conducted. That alone, however, will not insure unqualified success in the manipulation of a cement manufacturing plant.

A successful plant requires immense capital and intelligent management. The cement industry is not a place for small investors. For instance: in any locality where competition could be expected, it would usually be inadvisable to build a smaller than a 4-kiln plant. Such a plant would have an output of 1,500 barrels per day, but its construction would cost three hundred and fifty to four hundred and fifty thousand dollars, and it would require a working capital of one hundred and twenty-five to one hundred and seventy-five thousand dollars in addition. Evidently, therefore, the cement industry is not one in which individuals or small firms can find much of an opening, a fact which has been painfully ascertained by not a few who have experimented along this line. The industry is essentially one in which brains and money are far more important than raw materials and, consequently, cement plants with intelligently directed capital will rapidly increase in size, while poorer or ill-managed plants either remain stationary or expand very slowly. This of itself operates to cause a gradual concentration of interest; the stronger plants grow at the expense of the weaker, as a company less strongly owned or less intelligently directed has a tendency to always sacrifice the prospects of ultimate success to the certainty of immediate returns. Then, again, a company owned by a number of small stockholders can rarely withstand the pressure to pay out all the profits of an unusually prosperous year in dividends, while a stronger and more intelligently directed company assumes its growth and expansion in a natural manner by using part of the profits of the business to increase the size of the original plant.

THE UNLIKELIHOOD OF THE CEMENT INDUSTRY ASSUMING "TRUST" PROPORTIONS.

Not that there is even a remote possibility that we shall ever have a "Cement Trust," on account of the vast amount of raw materials, it being estimated that more than twenty per cent of the entire area of the United States is underlain by raw materials out of which cement could be made if prices were forced high enough. The Standard Oil Company, the United States Steel Corporation and the United States Government could not, by combining their financial resources, hope to acquire control of any large fraction of this immense reserve of raw material. It is safe to concede, therefore, that plants built and operated along the right lines would not only prove a profitable undertaking, but would also redound to the untold benefit of a community.

There has been a phenomenal increase in the manufacture of Portland Cement in the past ten years. In 1897 there was three times as much natural cement manufactured as Portland cement and the total output of Portland, natural and slag cements at that time was 10,361,476 barrels. In 1907 the output of Portland cement alone was 48,785,390, the total number for that year, including the three kinds of cement named, being 52,230,342 barrels.

During the last few years five large Portland cement plants have been established in the Southern States, having an authorized capital of $6,700,000 and an annual capacity of 2,750,000 barrels. Other companies have been incorporated which will increase the production to more than 5,000,000 barrels when they have been put in operation.

With the remarkable increase in Portland cement for building purposes and the construction of foundations, bridges and other structures requiring durability (in which stone or brick was formerly used), there are unlimited opportunities for the establishment of stone and cement in-

dustries in the Southern States. The great deposits of limestone and shale, which are generally located contiguous to the great coal fields, places the South in position to become a more important stone producing section, and the center of manufacture of Portland cement in the United States. It has been shown that along constructive lines and operation cement plants must be built and handled properly, and if manufactured as it should be and as I have endeavored to outline, there will be no difficulty in the finished product standing any necessary test. A certain brand of cement will then have its own reputation and a consequent demand for its output. The demand for Portland cement in the South today greatly exceeds the supply, the same thing being true of the States west of the Mississippi. Could there be a more inviting prospect for the development of an industry which is destined to surpass everything in importance of construction and of trade conditions, and of so paramount a factor in the growth and prosperity of the Southern States?

THE STONE INDUSTRY.

Next in importance in the building world is the stone industry, being so closely allied as it is with concrete construction for, as we know, concrete consists of a certain proportion of cement, stone, sand and water, the mixture being called concrete. Crushed stone is given up to be the best ballast a railroad can put under its tracks and, as above indicated, it is an essential factor in mixing concrete. As concrete buildings are supplanting those of other construction to a very marked degree, it can be easily seen that a stone quarry is a paying institution so long as the supply holds out. In figuring on a reinforced concrete structure, we of course have to know the cost of cement, stone, sand and steel delivered at the site of the work. If, therefore, we can assemble Southern made cement in conjunction with stone from adjacent quarries, together with sand, it can

easily be seen that the work can be much more cheaply done than if we have to introduce cement produced in other than Southern States. Steel would be the only commodity entering into the construction of such a building which we could not secure locally. The subject of concrete construction is of such vital importance to the future growth of the United States, and the possibilities in this field of construction are so wide, as to warrant a close study thereof by everyone who has the welfare of the country at heart. And this is particularly applicable to the Southern States by reason of the material depletion of our forests in recent years in response to the demands made upon them from all sections, as our forests are versatile, to say the least, in production.

As I have before stated, "Building Material" covers a very wide field. Granite, sandstone, limestone and marble are common materials for the foundations and walls of our structures, locks, dams, etc., but as already pointed out, concrete is rapidly supplanting the use of all other materials in this line of work. Iron and steel are now extensively used in all important structures. Other materials finding their place in the construction of practically every building of importance are copper, tin, lead, zinc and nickel, while paints, oils and glass cannot be omitted from the list. And our own section of the United States is well adapted to supplying each and every item entering into the construction of all buildings.

In Georgia, Virginia, North and South Carolina we have four States ranking as important producers of granite, with Georgia leading the list in value of production. Some of the finest granites are to be found in the South, and while there are only a few granite quarries operating in the South, recent examinations have shown that the Southern granites are not only of great extent, but they are equal and, in some cases, superior to granite produced by other sections of the country. Notable among granites to be found in the

South is the pink granite in the vicinity of Salisbury, N. C., and the grey and leopard-like granite of Mt. Airy, Ga. Georgia is not behind in the character and variety of her granite, while South Carolina has recently been developing extensive quarries in the granite belt of that State. Virginia also has claim to fine varieties of granite, which have been more especially developed in the vicinity of Richmond.

East Tennessee leads in the production of marble in the South, with Georgia a close second and Alabama beginning the development of her marble quarries. The State of Vermont produced over fifty-eight per cent of the marble output of the United States in 1907. Georgia ranked second in 1906 and third in 1907. In Eastern Tennessee we find grey, brown and mottled marbles. In Georgia we have several varieties, from fine white through various shades of pink, brown and green. In the western part of North Carolina is found both white and grey, a rare shade of pink or red marble, and a pure black. There are marble deposits also in Northern Virginia, though they have not been extensively worked. It is interesting to know that from one of these quarries, which has been in operation for many years, has been taken a fine variety of serpentine and also white marble, blocks of which have been produced that could well be used for monumental purposes as well as for interior work in buildings. This has a tendency to show some of the possibilities of the marble industry in the South, as no doubt closer investigation would develop resources along this line heretofore unknown. The same thing is true of the granite industry.

The total production of marble in the United States in 1907 for building purposes was $4,759,189—of which the Southern States produced $1,075,222, or a little over twenty-two per cent.

Limestone production and area has already been intelligently presented to us, and I will not go further into that question.

Crushed stone, whether of limestone, granite, sandstone or other materials coming under the head of stone, as has already been shown is an important factor in road building, ballast for railroad tracks and in the mixing of concrete. The crushed stone industry has moreover shown a remarkable increase in the past decade, its first demand being caused by the demand for good roads, especially in the New England and Middle Atlantic States. This industry increased in value in 1907 over 1906 $4,586,811—the production in 1907 being valued at $22,054,297. And it is interesting to remark here that limestone represents over sixty-two per cent of the output of crushed stone. Notwithstanding the fact that the financial and trade conditions during the last half of 1907 caused a break in building operations and so materially affected the output of building stone that it decreased in value $4,005,814—there was a decided increase in the total value of the stone output, the principal increase being in the value of crushed stone, which gained $4,586,811 in 1907, as compared with 1906. Building stone has not only been affected by the conditions above referred to, but also by reason of the fact that concrete construction has become so universal a factor along constructive lines, crushed stone, as has been indicated, playing an important part therein. Thus the loss in one branch of the stone industry has helped to keep up the demand in the other.

THE CLAY-WORKING INDUSTRY.

The clay-working industry is also one of wide possibilities in the South. And if we will only take advantage of the manifold opportunities offering in this line, this industry bids fair to become a potent factor also in the development and exploitation of Southern natural resources. Clays suitable for all varieties of manufacture of clay products from common red brick to the finest grade of porcelain ware are widely distributed throughout the Southern States. Almost every locality has its common brick clays, while in

all of the Southern States are found extensive deposits of kaolin or China clay. Georgia now leads in the clay industry in the South and, with North and South Carolina, are now shipping their finest grades of kaolin to Northern potteries, notwithstanding the fact that there are unusual opportunities for the establishment of local potteries and the general development of clay working industries right in our midst. By all the laws governing the carrying on of trade, are we not as a people to be censured for such lax business methods and failure to take advantage of our opportunities?

Confining the clay industry to clays as a building material, seven of the Southern States produced, in 1907, brick and tile to the value of $10,201,045—Georgia being the largest producer. The total production of the United States in 1907 is valued at $128,798,895. The possibilities in this line are self-evident, and this industry, therefore, speaks for itself. Nature has certainly done all she could and we should at least begin to show our appreciation of the most fortunate position in which we find ourselves insofar as natural resources are concerned by emulating and, eventually, surpassing those of our sister States which are now so far in the lead.

Although the list of materials used in building work is large and important, there are none which are not found in the Southern States which, as has been demonstrated, are especially favored with an abundance of constructive material. During the past few years—since the awakening of industrial activity—the South has not only been supplying the Northern markets with a considerable portion of building material, but are finding markets in other countries. What we should strive for, though, is the manufacture, in the South, of everything which natural conditions so peculiarly fit us for. We must necessarily be contented to grow in a natural manner, but in the meantime we must not overlook being aggressive. The immense proportions assumed

by the cotton mill industry in the South today did not, in a day, cause that industry to become the potent factor that it now is. It has not been so many years ago that the New England States received practically all of the raw material to be manufactured into the finished product. The same thing should obtain in the South with respect to the cement industry for, as I have endeavored to point out, the prominence of that industry can only be determined by the amount of cement produced, whether for local or foreign consumption.

THE IMPORTANCE OF CONSERVATION OF OUR FORESTS.

Of all building materials entering into construction work, the products of our forests have been most used, it being estimated that over sixty per cent of the buildings erected last year were of wood. In the country districts and small towns it is almost universally used and, as it is extensively used in buildings of stone, brick and other fireproof materials, it is seen to be the principal material most commonly used in construction. There is probably no section of the United States possessing such a wealth of timber, both in variety and quality, as the Southern States. We have made extravagant inroads on our forests until we have reached the point where we must call a halt, as by only the utmost care and economy will we be able to supply actual necessities through another generation. Therefore, the importance of, and necessity for, the conservation of our forests are both apparent. This refers to all sections and States alike. Some idea of its importance can be gained by reason of the fact that our two great political parties included in their respective platforms a plank urging the necessity for the protection of the lumber industry, although our Chief Executive was the first to take this subject up. As has characterized all of his acts, he handled this matter in a vigorous and effective manner, and to him and to the Governors of the States who met in this city a few months ago are we due

thanks and appreciation for the able manner in which our position in respect to our forests was presented before the American people. The ravages to which our timber resources have been subjected by forest fires, and our wasteful extravagance of the products of our forests, compels our making a radical change in the use of wood as our principal building material, confining its use as far as possible to the interior decoration of our homes, even curtailing as far as possible the use of wood as a fuel. This change should not only be brought about on account of the depleted condition of our forests and the urgent necessity for curtailment in that line, but also that our factories driven by electrical power, generated from our immense waterpowers, may not be incapacitated as the generation of this power is dependent upon the vast storage reservoir provided by the forest in order to insure a steady water flow. The stability of the water supply is the life blood of the power plant and, in addition, our forests have a tendency to minimize the disastrous floods which have descended upon us more frequently in recent years. In this connection it is interesting, although somewhat disconcerting, to know that the fire loss per capita in the United States is considerably greater than that of any other country—owing to the predominance of wood constructed buildings.

Just a word here in behalf of a movement to petition Congress not to eliminate duty on clays when brought over to the United States by foreign sailing ships as ballast. This matter is one of importance to all States alike, and any effort to lift the duty on this commodity should meet with prompt defeat.

I have endeavored to point out to you the rapid strides now being made in reinforced concrete construction, which places the cement industry on a parity with our cotton, coal and iron industries in point of importance of its influence on the South's future growth. In fact, all subjects assigned for discussion during the session of this Congress are so

closely allied in respect to their joint relation to, and bearing upon, the South's prosperity, and have been selected with such discrimination and intelligence, as to inspire us with an almost uncontrollable desire to speak upon all subjects at once. I am greatly pleased that the attitude of our esteemed President is averse to decreasing the South's representation in Congress, realizing as he does, no doubt, that the South is to play an important part in the future growth of our Nation.

I could go on and on in endless praise of the South and her unlimited resources, but as I understand the intention of this Congress it is to publicly show to all the manifold advantages of our Southland and to attract capital in the interest of its development. It is only relevant to here remark that to the efforts of such men as Mr. M. V. Richards are we enabled to elaborate so extensively upon the many advantages of our section of the country, as the Publicity Department of the Southern Railway, of which he is the head, has been actively engaged for many years past in exploiting the untold and undeveloped wealth of the Southern States.

Let us then return to our Southern homes and firesides with a determination to stand together, work together and pull together that our efforts in the rapid development of our natural resources may prove productive of the desired results, handing down to our posterity the fruits of our labors, and imbuing the next generation with the same noble impulses which have prompted us to come together today.

SECTION V-A.

THE SOIL RESOURCES OF THE SOUTHERN STATES.

J. A. BONSTEEL,
Chief of Survey Work in the Bureau of Soils.

In discussing the soil resources of the Southern States it is necessary to hold in mind the immense magnitude of the subject. Texas alone of the fifteen Southern States represented in this Congress has a land area greater than that of either France or Germany. The aggregate land area of these fifteen States is as great as the land area of western Europe. It is only possible to outline some of the opportunities which await this section of the country and the individuals who shall take part in its agricultural development.

The Bureau of Soils of the U. S. Department of Agriculture, through its soil surveys, has been taking an inventory of the soil resources of all the States and a large amount of work has been done in the country covered by the delegates to the present Congress.

Beginning in the West the State of Texas at present contains probably the largest body of partially developed agricultural lands yet remaining in the United States. No census figures are sufficiently recent to cover the conditions which now exist in Texas since the growth of that State in population and industry and agricultural development during the past eight years has rendered obsolete all of the fig-

ures compiled in the last Federal census. We do know, however, that the great stretches of prairie land in central and northern Texas are rapidly developing not only as cotton lands but more recently as the great Southern home of the corn and alfalfa crops. Upon the basis of corn and alfalfa alone the meat production of the State of Texas may be vastly increased and as the public range land of the more northern States is occupied by homesteaders and subdivided into farm lands the prairie farmers of Texas will meet an increasing demand for beef and pork products which can be produced at a minimum expense on the basis of Texas corn and Texas alfalfa.

The Bureau of Soils has shown by its investigations of the soil resources of Texas that the soils of northeastern Texas can and do produce a grade of cigar filler tobacco which compares very favorably with the best which is produced in the Island of Cuba. This industry did not exist when the last census was taken and the area of Texas soils which can be utilized for this crop is measured by square miles and not by acres. The acre value of the crop far exceeds that of cotton, corn or any other staple product of the region.

The development of the rice and sugar cane industries through the Gulf portion of Texas is in its infancy. I have recently learned of the extension of the sugar industry in a single county of Texas on such a scale that the rivers must be deepened in order to furnish transportation facilities for the output of a single group of plantations.

The Bureau of Soils is now engaged in a preliminary survey of fourteen thousand square miles of country between the Gulf of Mexico and the Rio Grande in south Texas, where the climate is such that a new citrus fruit belt is developing which bids fair to rival the older established orange and lemon regions of the Western States. A few years ago practically all of this country was given over to herds of cattle and the grazing industry. At the present time flour-

ishing cities exist where no population was reported at the time of the last Federal census.

Across the Sabine River in Louisiana the lumbering industry has made such progress that thousands of acres of land previously forested are being thrown open to agricultural occupation. All through western and northern Louisiana the sandy loam soils of the region are suited not only to cotton production but also to fruit raising and vegetable gardening. The extensive swamp areas lying in the southern part of the State are being developed by private enterprise and the rich alluvial soils of the great Mississippi delta still remain practically untouched except along the front lands and the bayous. Less than one-half of the land area of Louisiana is now included in farms and not over one acre in six was reported as improved land by the census of 1900. Additional drainage facilities and better transportation will enable Louisiana to increase her production of rice, cotton and corn to double the present production within the next 12 or 15 years.

There are 8,000 square miles of rich alluvial bottom lands between the Yazoo and Mississippi Rivers in the State of Mississippi. About 20 per cent of this land is now cultivated and the balance awaits drainage and occupation. This land consists of "the cream of six of the richest prairie States" washed down the river and deposited at the front door of the State of Mississippi. Its development and occupation are awaiting only proper levee systems and proper drainage. In the southern part of the State lands formerly occupied by extensive forests are found well suited to the production of several varieties of cotton and the seacoast section is beginning to be developed for the extensive production of truck and fruit crops. In northeastern Mississippi another belt of black prairie exists similar to the alfalfa soils of northern Texas. This "black belt" of northeastern Mississippi may rapidly become a rich green belt through the introduction of alfalfa and its profitable growth upon

these calcareous soils. Pioneer planters are now reaping a profit of 60 dollars per acre through the medium of this crop.

The soil survey work in Alabama has shown that the gulf counties are well suited to the production of all the truck and fruit crops common to the Gulf of Mexico coast. They also contain extensive tracts of land available for cotton production and favored situations can be occupied for the growing of sugar cane. Northward in the State the red soils of the Orangeburg series are suited to the growing of the Cuban filler type of cigar tobacco, and a start has been made in the introduction of this profitable crop. The "Black Belt," mentioned in Mississippi, extends throughout the central portion of Alabama, giving opportunity for the production of the greatest forage crop—alfalfa. In the eastern and northern parts of the State, in addition to general farming lands of high value, there are extensive areas of soils well suited to apple and peach production, while the northern limestone soils along the Tennessee line have a higher value than has yet been appreciated for the production of wheat and other grain crops.

The peninsula of Florida, with its peculiarities of climate and soil, gives an eastern semi-tropical region unique among the Southern States. Not one acre in twenty of Florida lands has yet been developed. With proper drainage there are thousands of square miles of land within the State which may be utilized for the production of staple and special crops. In the northwestern portion of the State the tobacco industry has rapidly developed. Both the Sumatra wrapper and the Cuban filler tobacco are produced to excellent advantage. In 1902 three thousand acres of tobacco were planted in Florida, giving a yield of 1,600,000 pounds, with a farm value of less than half a million dollars. In 1907 the acreage amounted to 7,500 acres, the yield was nearly 7,000,000 pounds and the farm value was $3,122,000. The area of known tobacco soils in northwest Florida as

shown by the soil surveys made in that section is sufficient on a conservative estimate to allow of a ten-fold multiplication of this profitable tobacco industry. There has been a wonderful development of the citrus fruit and trucking industry throughout all of Florida, but with 30,000,000 acres of undeveloped land the beginning has just been made.

The soils of Georgia, extending from sea level to the tops of the Appalachian ridges, present a wide diversity in agricultural opportunity. Rice and Sea Island cotton along the seaboard, long-staple upland cotton in the southeastern countries, tobacco in southwest Georgia, fruit and cotton through Central Georgia and grain and apples in northwest Georgia can all be produced to even greater advantage than at the present time. Georgia has already shown a strong tendency towards more diversified and more profitable agriculture. Through the establishment of eleven Congressional district agricultural high schools the State has placed a premium upon agricultural industry, and has laid a sure foundation for great development in the near future.

North and South Carolina show the same diversity of soil conditions which has been noted in Georgia. As in Georgia the coastwise region of both of the Carolinas presents excellent opportunities for the production of winter truck crops having a high acreage value. In addition, there are extensive tracts of poorly drained swamps and savannas aggregating thousands of acres which are known to constitute the best corn soils east of the Allegheny Mountains. There have been numerous instances where the proofs from a single year's crop have paid not only the cost of drainage but also the initial price of the land. Throughout this section of the country the bright tobacco crop can be extended over thousands of acres of land, and peanuts, cowpeas, strawberries and winter truck crops are raised to exceptional advantage.

Throughout the entire Piedmont section of Alabama,

Georgia, South and North Carolina and Virginia the rapid development of manufacturing based upon the water powers of that section has caused exceptional growth in the population of manufacturing towns. It was my privilege recently to investigate some of these growing cities in their relationship to agricultural development. I found that not over 25 per cent of the meat and not more than 15 per cent of the dairy products consumed by the manufacturing population were produced in the States where these towns are located. Throughout the Piedmont section of all these States there is almost an unlimited opportunity for increasing the dairy industry, the production of meat for home consumption, and the raising of vegetables and fruits for the nearby city trade.

In Virginia about one-half of the land now held in farms may be classed as improved land. Great progress has been made within the past few years in the agricultural development of all sections of the State. The fruit industry in the mountain region has given Virginia apples a world-wide reputation. Improved methods in tobacco culture are increasing the revenues derived from Virginia tobacco lands. In the eastern tidewater section, wherever additional transportation facilities have been supplied, the production of garden vegetables and of fruits has greatly increased.

In Kentucky and in Tennessee new agricultural industries are being introduced. Both peaches and cantaloupes flourish upon the soils of these two States and extensive melon and peach shipments are made from sections where these products were unknown at the time of the last census. The development of the mountain lands in the eastern sections of both States has just begun and I have seen, personally, splendid crops of sugar corn, green peas, potatoes and other garden vegetables produced on lands in the Cum-

berland plateau which ten years ago were considered worthless for any agricultural purpose.

The development of the apple industry in Arkansas and southern Missouri is well known to every one. It is not so well known that there are excellent rice lands in the central prairies of Arkansas and that Missouri may some day equal Kansas in the production of alfalfa upon her prairie lands.

The new State of Oklahoma has only begun her agricultural development. Here the climatic conditions are such that the cotton of the Southern States and the wheat and corn of the more Northern States meet in the same region. Her upland soils are not only suited to the production of the great staple crops, but in many localities can be made to produce excellent crops of apples, peaches and grapes.

It is not possible to express in figures the extent or variety of agricultural possibilities within the States which I have briefly sketched.

I would simply say in conclusion that at the time of the last Federal census the annual value of the farm products not fed to live stock in these fifteen States exceeded $1,000,000,000. I confidently predict that the next census will show a doubling of this value, and I shall be very much disappointed if each succeeding census for another generation does not double the figures of the one preceding.

I base this estimate upon the fact that almost without exception not one-half of the land held in farms in these States is classed as improved land, and upon the additional fact that from personal observation throughout the region I know the Southern farmers are steadily increasing the amount of their crop yields upon each acre of land.

I also know from the inquiries which are made continually at the Bureau of Soils that thousands of farmers throughout the north-central States are looking to the ag-

ricultural lands of the South as the last resource of cheap and good agricultural lands. I know that the high prices for farm land in many of the Northern States and the severity of Northern winters are impelling hundreds of home-seekers to go South for the development of farm homes. I know that thousands of acres of lands formerly held to be of no value except for forest purposes are now known to be well suited to the production of special farm crops.

With these facts in view I hold that the South is a region of almost boundless agricultural opportunity, and I know that the brains and enterprise of these 15 States will not neglect so great an opportunity.

SECTION V-B.

COTTON MONOPOLY AND COTTON MANUFACTURE.

Hon. D. A. Tompkins.

The production of cotton as an important industry may be said to have begun about 1790. Reckoning bales at 500 pounds each, there was produced in the year 1790, 3,000 bales. The price obtained was 26 cents per pound. The production increased and so also did the price until in 1799 the production was 41,000 bales and the price 44 cents. In 1800 the production was 73,000 bales and the price was 28 cents. In 1820 the production was something over 300,000 bales and the price 17 cents. Increasing the production and conversely lowering the price was practically parallel with the strengthening of the influences of the institution of slavery and the diminishing of manufactures and diversified vocations in commerce and transportation. The institution of slavery seems to have had two important influences. It dried up the manufactures of the cotton growing States, gradually reducing the occupations of the people to the production of staple crops with slave labor. It had the influence also of driving off white immigration; of constraining emigration of free white labor and other white people who were opposed to slavery. It made another tide of emigration, to wit: that of white people who favored the institution of slavery and who moved to the southwest, carrying slaves with them, to find more land.

It transpired that all of these influences were not good for the South and they ultimately brought the price of cotton, even in slavery times, down to 5 cents per pound. It brought about a condition which was neither advantageous to the State, nor to the individual, not even the slaveholder. After this condition was reached a tremendous effort was made (about 1840) to revive manufactures and commerce, but the contest was between slavery and free institutions and for the time being the advocates of slavery won the day. During the decade from '40 to '50 cotton even reached the low point of 5 cents per pound. From '50 to '60 the efforts to re-establish manufactures and improve commerce influenced it upwards again, and then came the Civil War, which ended the institution of slavery.

Besides the abstract proposition, that situation in which there is but one vocation in which all people must enter, is disadvantageous, we find as a practical fact that in the early days of the Republic when the South was dominated by free institutions, she had a wide diversity of pursuit for her people. Manufactures prospered; the price of cotton was high, and the country grew rapidly rich outside of counting slaves as wealth. We perceive that as legislation favored slavery, manufactures diminished and ultimately practically dried up. The diversity of occupation diminished also and the price of cotton went from 40 cents per pound to 5 cents a pound.

After the freedom of slaves there was a period of great confusion. War itself was as nothing as compared to the damage the South suffered through the quarter of a century of so-called reconstruction. The results of the war practically wiped out all capital. Therefore the South was left very poor and without means to enter upon varied industries at once. Omitting the matter of capital, the political condition was semi-anarchic, and if there had been capital little could have been done until political order and decent government was restored in the Southern States. Dur-

ing this period everybody followed the business of raising cotton, and a few other staple crops, because that was all that was left from the Civil War. This made an unnaturally fierce competition which again reduced the price to 5 cents, and the condition of the people to great poverty and distress. Then began the real reconstruction of the South; the establishment of manufactures, the diversity of pursuits. This growth of manufactures has brought cotton back to a condition of fair remuneration for the producer. When cotton was 5 cents a pound the life of the cotton producer, whether black or white, was deplorable. Now at 10 cents a pound the cotton producer is far from making a profit of 100 per cent, because it takes the bulk of the difference to bring his living up to that of people in other vocations.

The manner in which the development of manufactures and commerce have accomplished such a radical benefit to the farmer may be stated as follows:

1st. Vast numbers of people have been taken off the cotton farms by the various manufactures and commercial developments and this relieves competition in cotton production.

2d. All of the cotton factories become consumers of cotton and thereby there is a tendency to stimulate the price.

3d. This factory population, drawn off the farms, become consumers of perishable farm products and thereby the condition of the farmer is very much improved by the income for farm products, which were formerly worthless because without a market.

There are other ways in which the producer of cotton has been benefited, but the above three items are sufficient to show the principle.

The spinners of Europe, and especially those of England, always say in a complaining way that the American Cotton Producer should sell cotton cheap. We who have had to do with cotton production or who have lived in the country

where it is made, know that cotton has been selling too cheaply, and is yet selling too cheaply. We have seen governmental policies pursued in the Southern States, which reduced the price of cotton to where it was unprofitable before the Civil War, this in connection with the institution of slavery. We have seen since the Civil War mistaken governmental policies which again reduced the price of cotton to 5 cents and reduced the people to poverty. We know that in the South, before the time that slavery became dominant, manufactures and other various pursuits were prosperous and the price of cotton was high. We know that since the re-establishment of manufactures, dating back to, say 1890, the price of cotton has been gradually increased again until it has reached a point which has relieved the poverty of the farmer, but has not yet reached a point where money may be made as much in this section as where diversified pursuits have been in vogue for a long time. Therefore, we may see that the matter of a fair price to the cotton producers and the matter of making cotton production promote the best welfare of the State lies in making laws that foster the development of factories, the development of railways, the development of water ways, the preservation of forests and various other things, each one of which has its own influence.

Under the influence of reconstruction period cotton reached the low point of 5 cents per pound about 10 years ago. It is about that time that the growth of manufactures began to have an influence, and 10 years later, viz., the present year, the price of cotton has averaged 10 cents per pound. In other words, 10 years ago 10 million bales of cotton brought 300 million dollars. Now, 10 million bales of cotton bring over 600 million dollars. Besides the 100 per cent increase in the value of the raw cotton itself, there is the development of the cotton oil business which is worth at least 100 million dollars a year. The markets for perish-

able farm products and the better railway facilities by which the perishable farm products may be shipped north as well as the sale to the local manufacturing population, have probably yielded to the farmer at least 200 million dollars per year, which he formerly did not get. Taking it all in all, in the present condition of manufacturing, commercial and transportation development, the cotton farmer has been brought to receive at least one billion to one and a quarter billion dollars, where he used to receive only 300 million.

Although the United States is supposed to enjoy a practical monopoly in cotton production, the crop has really brought the producer less money in proportion than wheat, or corn, or tobacco, or any of the staple crops of the world which have no monopoly. The fault has been with the cotton producer himself. Instead of preserving the conditions of 1800 when cotton was 44 cents per pound, he tied up with the institution of slavery, made laws favorable to slavery and which drove a large force of free white working people out of the country and ultimately reduced the price of cotton to 5 cents a pound. Even to this date the farmer often manifests a prejudice against the factory when in reality the factory is his salvation. We have seen how since the development of manufactures the farmer gets 300 million dollars per year more than he used to get without the factories. All of the cotton factories in the South have not cost exceeding 20 dollars per spindle, which at 10 million spindles makes 200 million dollars investment. It is self-evident that out of the 300 million dollars annual increase in receipts for his cotton crop the cotton farmer might well have given 200 million dollars to build factories and give them free to anybody who would operate them. Even in one year they would have had 100 million dollars profit over and above what they used to get without factories and then after that would have had still 300 million dollars profit annually.

We have seen that in the first 50 years of cotton production the price kept above 17 cents per pound and reached as high as 44 cents. We have seen that during the Civil War cotton brought nearly a dollar a pound, which shows the strength of demand for some cotton, and particularly American cotton. I am one who believes that 15 cents is not too much for the farmer to receive for cotton, and if the farmer will help to still further stimulate the construction of factories, the development of commerce, the building of railways, the diversification of products of the farm, we believe that cotton may be brought to bring 15 cents per pound and the world to a knowledge and understanding that that is a fair price. Instead of benefiting by the monopoly in the past we have really pursued a course to destroy the value of our monopoly. Henceforward we should do the other thing, to wit: diversify the pursuits of the people until the production of cotton is limited to what really will be taken at 15 cents. This becomes easy in view of the fact that there are a great number of manufacturing pursuits and crops which may be produced on the farm which are more profitable at the current prices of today than the production of cotton at 10 cents a pound. Therefore no one would be called upon to enter upon a less profitable vocation, but only to appreciate how much better opportunities may be found in other lines than in the production of cotton at 10 cents a pound with the result that less cotton will bring more money than a fixed quantity brings today.

The associations of cotton farmers have done much to help the present condition of the cotton market by the development of warehouses and a more gradual sale of cotton, but the real and supporting stimulant to higher prices is the development of factories and diversified pursuits. Therefore it is important that the farmer be brought to a knowledge of the fact that factories and railways are not

only his best friends, but his salvation lies in these. The reverse of the proposition is equally true, that the farmer and his products are as essential to the factories and railways as these are to the farmer. When we have brought these three elements, to wit: agriculture, manufacturing and commerce, the latter including transportation, into harmonious working co-operation, then will we get the best results in each one of these departments and that is the moral of all that I have had to say.

SECTION V-c.

AGRICULTURAL REVOLUTION OUTLINED.

CLARENCE H. POE.

"The captains and the kings depart"; our bankers, our manufacturers, our merchants, our lawyers, our doctors, all these have brought their reports, worthy, inspiring, notable, and all of these men I honor; but here at the last I bring to you your forgotten man, the man who, of all men, is re-building and must re-build the South—the man behind the plow.

Thirty years ago and more that great-hearted and far-seeing Southern poet, Sidney Lanier, gave us the key-note of Southern development and the burden of my address in a paragraph that every Southern school-boy ought to learn by heart:

"A vital revolution in the farming economy of the South, if it is actually occurring, is necessarily carrying with it all future Southern politics, and Southern relations, and Southern art, and such an agricultural change is the one substantial fact upon which any really New South can be predicated."

It is Lanier's old message that I would bring to you today—and yet I bring a new message too: that at last we have definitely set about the fulfillment of his dream. To tell you what this means to you and to the South and to ask you for your support in carrying it to success, is the object of my coming.

AVERAGE SOUTHERN FARMER SHOULD MAKE $500 MORE A YEAR.

As a background of my story and in order that we may see its large meaning in the right perspective, I must first of all call your attention to two statistical facts. First, as to the overwhelming predominance of rural interests in the South, the census showing that more than 80 per cent of our population is rural and that the South is to-day the one section of America of which it is true that there are more people engaged in agriculture than in all other occupations combined. Second, as to the efficiency and earning power of these people heretofore, the last census showing the average annual value of products per farm in the North Atlantic States as $984, in the South Atlantic as $484, or exactly $500 per year less; in the North Central States as $1,074, in the South Central, $536—or $538 per year less. And with this as my basis, I am ready to lay down three or four propositions which I wish to hammer home to your minds:

1. To bring up its earning power $500 more a year for each Southern farm is the supreme task and opportunity of our generation.

2. It is not only our supreme task and ambition, but it is a realizable ideal, a workable, practicable program of progress.

3. It is not only our supreme task, and a realizable one, but is one upon whose success depends the prosperity not only of the South as a section and Southerners as a whole, but also (and more important) the prosperity of you yourself as an individual, and of every individual Southerner—the farmer no more than the banker, the merchant, the railroad man, the lawyer, the preacher, the teacher, the statesman. The prosperity of every trade, art, and craft in a community and the prosperity of every individual in the community, from the boy on the street who blacks your shoes to the master mind who organizes your railway sys-

tems or governs your State—the prosperity of every man, I say, depends upon the prosperity of the average man, this average man in the South being a farmer—and this is the greatest truth that I hope to bring you to see with me this afternoon.

4. And then the hopeful fact—the fact that already earnest men and women, working here and there in different lines of endeavor, have developed almost unconsciously the several component parts of a fairly comprehensive and well-rounded scheme of rural development, a primary and essential part of which is this getting $500 more a year farming in the Southern States—a scheme of education which embraces young and old, not only the farm boy in the school, but the adult farmer and the farmer's wife as well.

AN APPEAL TO THE SOUTH'S COMMERCIAL INTERESTS.

And now, as the spokesman of the South's agricultural interests, I come to you to appeal for your support, to ask you as citizens and as leaders to join in a great movement for rural development in the South. And I am going to base my argument not on any plea as to what this development will mean to the South as a section, or to Southerners as a whole, but upon what it will mean to you as an individual. My hope is to show you that your individual prosperity is dependent upon the prosperity of the average man in the South, this average man (I repeat) being a farmer.

Too long, my fellow Southerners, a large element of our people have cherished a different feeling. Too long, too long—ah, tragically too long—men have thought or said, "if I am a merchant, lawyer, manufacturer, preacher, railway man, banker, or teacher, it matters little to me (except, of course, as a matter of altruism or benevolence) whether agriculture prospers or not, whether the man in the field is ignorant or educated, is progressing or retrograding, is prospering or suffering."

I come to you today to tell you that this is the feeling that has cost the South leadership. This is the sentiment that has kept our manufactures, our commerce, our literature, our education—that has kept one and all of these chained down to the unprofitable level of our unprofitable average man, our man behind the plow. Increase his earning capacity and you increase the earning capacity of every other worker in the South; free him from the chains of unprofitable, because misdirected, labor, and you cut the hindering shackles of every other worthy interest in the Southern States.

Ah, if our statesmen and public men in the South these last thirty years could only have realized the fundamental truth in Lanier's utterance—"A vital revolution in the farming economy of the South is necessarily carrying with it all future Southern politics and Southern relations and Southern art, and such an agricultural change is the one substantial fact upon which any really New South can be predicated"! Ah, if they could only have realized that the prosperity of every man depends upon the prosperity of the average man!

PROSPERITY OF EVERY MAN DEPENDENT UPON PROSPERITY OF THE AVERAGE MAN.

I do not know whether or not it has ever been worked out as a principle of political economy, but anyhow it is unquestionably true that wealth is by nature not aristocratic, but democratic. The poorer every other man is, the poorer you are. The richer every other man is, the richer you are. Every man whose earning power is below par, below normal, is a burden on the community; he drags down the whole level of life, and every other man in the community is poorer by reason of his presence, whether he be white man, or negro, or what not. Your untrained, inefficient man is not only a poverty-breeder for himself, but the contagion of it curses every man in the community that is

guilty of leaving him untrained. The law of changeless justice decrees that you must rise or fall, decline or prosper, with your neighbor. You will be richer for his wealth, poorer for his poverty.

And so today every man who is tilling an acre of land in the South so that it produces only half what intelligently directed labor would get out of it is a burden on the community, is dragging down the level of life for every other man in the community. Suppose you are his fellow-citizen: then because of his inefficiency, his poverty, because of his failure to contribute to public funds and public movements, you must have poorer roads, poorer schools, a meaner school-house and court-house, a shabbier church, lower-priced lands: your teacher will be more poorly paid, your preacher's salary will be smaller, your newspaper will have a smaller circulation, your town will have a poorer market, your railroad smaller traffic, your merchant smaller trade, your bank smaller deposits, your manufacturer diminished patronage, and so on and so on.

NEGRO MUST BECOME MORE EFFICIENT OR GIVE WAY TO IMMIGRATION.

The ramifications are infinite, unending. And the doctrine is true whatever the color of the man. The ignorant negro in the South is one of the greatest economic burdens with which any people has ever had to contend. From travel and observation in ten Southern States, I have almost worked it out as a principle of political economy that, other things being equal, States and communities are prospering in proportion to their white population. I do not know what we are going to do with the negro. I do know that we must either frame a scheme of education and training that will keep him from dragging down the whole level of life in the South, that will make him more efficient, a prosperity-maker and not a poverty-breeder, or else he will

get out of the South and give way to the white immigrant. No acre of land will long own as its master the man or the race who mistreats it and makes it unfruitful. Either we must have the negro trained or we must not have him at all. Untrained, he is a burden on us all. Better a million acres of untilled land than a million acres of mistilled land.

Let us remember then that our economic law knows no color line. White or black, the man whose efficiency is above par is a help; white or black, the man whose efficiency is below par is a hindrance.

SOME GREAT FALLACIES AND WHAT THEY HAVE COST US.

"The farmer, the common laborer of any sort, needs no training. Educate him and you spoil him. The poorer you keep him, the richer will be the upper class." These have been our pet fallacies. And a long time have they been preached. Hugging this vampire delusion, the Southern plantation owner has seen vast areas abandoned to broomsedge and gullies, in spite of the fact that intelligent handling would have kept them productive a thousand years.

Preaching this fatal doctrine, the merchant has sold Western meat and scooters and tobacco, when with prosperous patrons he might have quadrupled his profits by selling sulky plows and harvesters and carriages and pianos.

Deluded by this fallacy, the statesman has struggled against fate, only to die and be forgotten by people too poorly educated to read his biography, and too poor in property to build a monument to his memory, while smaller and meaner men in sections unshackled by these ancient errors, are famed in song and story.

Writing editorials in support of the aristocratic instead of the democratic theory of industry, the editor has seen his patent-outside weekly fail of support, when a properly trained and educated people would have brought him wealth as the head of a prosperous daily.

Fighting public taxation for better schools and other methods of training and enriching the average man, your manufacturer has struggled along with a small business when a prosperous average man would have given us great industries like those in the North and West.

Still arguing that education and training would spoil the working man, and that "cheap labor" is what we need, your banker has complained that the South offers no opportunities for the great financier, forgetting that cheap, unprosperous labor means small, unprosperous banks.

Opposing taxation for better schools, the railroads hauling cotton in the fall and low-grade fertilizers in the spring, have fought passenger rate reduction as a life and death matter when a well-trained people would supply the various traffic and the heavy dividends of the other sections.

Your lawyer, doctor, preacher, teacher—each falling in line with the ancient heresy, has paid the penalty in diminished fees, diminished salaries, diminished influence.

Victims of the vicious teaching I am pointing out, your men of talent—artist, sculptor, poet, orator, have too often fled to other sections, or else have died with vision unfulfilled among a people untrained to appreciate their genius—when but for these things you might see statues of Southern leaders in every Southern city, the work of Southern artists in the world's greatest galleries, the thought of the Southern poet the common heritage of mankind. It is not that we have had no mighty dreamers; it is that they sleep in neglected graves trampled under foot by war, and waste, and error.

Now war and waste, thank God, are behind us. Let us also put error behind us.

THE SOUTH'S GREATEST ERRORS.

Of all our errors our greatest has been the failure to recognize the fact that the prosperity of every man depends upon the prosperity of the average man—and in many cases

the actual acceptance of the doctrine that the State is benefited by having cheap, untrained labor. We have seen on the contrary that such labor is a curse.

And our second great error has been like unto it—the belief that even if the prosperity of every man does depend upon the prosperity of the average man, we are too poor to train him. The truth is, that we are too poor not to do so. The fullest and freest training of the average man is the one and only positive guarantee of Southern prosperity, and by this I mean the prosperity not only of our section and of our institutions and of society as a whole, but the prosperity of every individual—every farmer, every laborer, every merchant, every manufacturer, every professional man, every inhabitant, as I have said, from the boy who blacks shoes to the master-mind that builds your railroad systems or governs your State. And having once accepted this doctrine concerning the average man—and the average man in the South being a farmer—we shall not be slow to put into effect that large and comprehensive program of rural development which earnest men and women, working in many different lines, have gradually brought into shape—a program which looks to the ultimate doubling of the output and the more than quadrupling of the profits of that occupation which engages the attention of more people in the South than all other occupations combined.

THE GREAT REVOLUTION THAT HAS NOW BEGUN AND WHAT IT WILL DO.

Then indeed will the South blossom as the rose; then indeed will the long ambitions of our fathers come at last into glorious fruitage. Not only will the common farm homes in the South be supplied with all the conveniences our city brethren now enjoy, good roads and telephones and fine stock and fat acres greeting the glad eyes of an awakened people; but every industry known to our South-

land will throb with new vigor as if fresh blood had been poured into its veins. Great mercantile houses will grow up among us rivaling those of the North and West, and Southern merchants will make the big profits that come with big sales instead of the small profits inevitable with small sales. (Merchants in the West are selling automobiles to farmers; compare, if you will, the profits on automobiles and ox carts.) Manufacturers of a thousand things for which there is now no profitable Southern market, we shall have; and our laboring men, finding room for greater skill and higher wages, will walk with quicker step and lighter hearts. Bankers will no longer own allegiance to other sections, but our own financial institutions will become the equals of any in America. Our newspapers will grow greater with stronger subscription and advertising patronage, and Northern men and women will begin to read Southern magazines and Southern dailies. Our railroads will double-track old lines to supply the new demands, and new lines will be built to quicken dead sections into life. Able lawyers will no longer go North to find big fees, foreign pulpits will no longer be able to take our strong religious leaders from us, our poet-souls and artist-souls will find here at last the atmosphere in which they best can flourish, our statesmen will speak with potent voices in the councils of the nation, and the eye of every Southern schoolboy will sparkle with a keener pride as he learns the story of a generation that has wrought as well in peace as the fathers fought in war. These are the things we have now set out to win; these are the things which are to come about with that agricultural revolution upon which alone can any really New South be predicated.

I have no time in this brief address to speak in detail of the plans by which our $500 more a year per farm are to be realized. Suffice it to say that we shall manage the land itself better—now more barbarously handled by us than by any other civilized people—land "wearing out" with us in

ten, twenty, or thirty years, whereas I walked over lands in Europe this summer which had been cultivated for centuries before your forefathers and mine first heard that an Italian named Columbus had discovered a new land beyond the seas—and are now producing even bigger crops than then. We shall grow stock and so get two profits from land instead of one. We shall grow our own manure and so save $25,000,000 a year on fertilizers. We shall use improved seed and improved stock and very nearly double our profits through this one change. We shall use more horse-power and farming machinery—run our brains with two to four-horse power instead of one-horse power. And in a hundred other ways we shall improve the South's agricultural practice, bring it up to Northern and Western standards—and thereby up to Northern and Western profits. By reading farm papers and keeping up with our Experiment Stations and agricultural workers, you can learn the plans by which the reform is to be brought about; let me now speak in conclusion of the agencies to be used.

THE AGENCIES THAT ARE TO BE USED.

First of all, then, there is the school. We must double the energy we are putting into our great educational crusade. There is no time to dispute about the form of education. We need more common school education, more high school education, more college education, more technical education, more classical education. But without disparaging the college or the university, I would say that most of all we must give greater attention to the public schools. It is in them that the farmer, the average man, gets his education. We cannot make our Southern farmers adopt Iowa methods so long as in the average Southern State there are five times as many white farmers who can't read a farm paper or fertilizer formula as there are in Iowa. We cannot improve our farming until we educate our farmers; we cannot develop the South until we develop the Southerners.

Nor is it enough that we have longer public school terms; we must have better public schools. And we must make them train for life, for practical things. Teach the farm boy how cotton and corn and tobacco may be improved by seed selection; how a plant feeds, and how soils are exhausted; what elements are found in common feedstuffs, and which make fat and which make muscle; which cows make money in the dairy, and which should be selected for beef—and a thousand other things. Not only should the elements of agriculture be a public school study in the rural districts, but there should be a revolution in the text-books for other studies. In your spelling book, for instance, where do you find such words as nitrogen, potash, protein, or even such common farm words as clevis, singletree, mattock, etc.? Made by city people for city people, the books and teaching have not been adapted to the needs of the country children. We shall take a long step forward when the farm boy has proportionately fewer problems in arithmetic about foreign exchange and latitude and longitude and the metric system of weights and measures; and more about how to calculate a feeding ration for cows or a fertilizer formula from certain quantities of potash, phosphoric acid and nitrogen, and when he studies proportionately less about far-away Australia and Kamchatka and more about the soil that he walks over and plows in every day of his life. Agricultural high schools will continue this work, and the agricultural college will carry the process still further with the leaders.

Much as the agricultural colleges, the agricultural high schools, and the agriculturalized common schools, however, will do for the farmer, their good effects can hardly be seen until the next generation, and we cannot wait until the next generation for our deliverance. Fortunately for us, therefore, there are a dozen agencies which are educating the adult farmer no less effectively than the schools are educating the farmer's boy.

EDUCATING OUR GROWN-UP FARMERS.

Chief among these agencies, in my opinion, are the farm papers, the farmers' co-operative demonstration work, farmers' clubs, and the farmers' institutes. Of the work of the farm press it would be immodest for me to speak at length, and yet I must say that I know of one section where the work of a farm paper has been so thoroughgoing and effective that it is a common saying: "You don't have to ask whether a man reads it or not: you can tell by his farm." The farm press of the South has doubled in efficiency in ten years, and the millions of pieces of literature it distributes yearly—practical farm experiences, clear-cut agricultural philosophy, the teachings of scientists and experimenters interpreted for the every-day farmer—this never-ceasing practice school with its millions of working pupils make a leaven that would of itself ultimately leaven the whole lump. But there are, as I have said, a dozen other agencies, all working to the same end, and each one of them deserves its meed of praise.

The Farmers' Institutes are of the most far-reaching benefit, bringing as they do the agricultural leaders of each State face to face with the farmer, and not only the leaders but often agricultural machinery, agricultural equipment, etc., which the farmer would not otherwise come to understand. Lately the scope of these institutes has been extended so as to include farmers' wives as well, and no branch of educational endeavor of which I know has brought greater results for the money and effort expended than just this.

Farmers' clubs are also doing an immensely useful work. Once we had farmers' organizations which studied politics chiefly; now we have the Farmers' Union with millions of members in the South whose chief object is to encourage scientific farming.

MARVELOUS RESULTS OF CO-OPERATIVE DEMONSTRATION WORK.

But perhaps the most immediately effective plan ever originated for helping the Southern farmer is through what is called the farmers' co-operative demonstration work—a plan of such patent merit that it is a wonder Adam didn't think of it. As a matter of fact, however, it was begun but a few years ago by the National Department of Agriculture, is under the direction of Dr. Seaman A. Knapp, and the idea has since been adopted by more than one State Department of Agriculture. The plan is to have a strong man, a great agricultural leader like Dr. Knapp, at the head of the general movement. Then in each State the most successful and most progressive farmer who can be had is named as State agent. Similarly in each county or district, the best farmers join in as local agents—and so on until hundreds and thousands of farmers are enthusiastically at work, each one acting under instructions from the most progressive and successful farmer of his neighborhood. This system of helping the farmer is of inestimable benefit. Only a few weeks ago I saw a statement from Harrison County, Texas, signed by the leading bankers and business men, declaring that the work in the preceding twelve months alone had been worth $100,000 to that one county. The obdurate farmer may scoff at learned bulletins, he may refuse to be "preached at" by Farmers' Institute lecturers, and he may ignore test farm experiments as "not practical," but he falls right into the ranks with the great forward movement of agricultural progress when a practical money-making farmer of his own acquaintance becomes his captain—or rather his teacher, guiding his hand, as it were, while he learns to write the new and magical letters of science and profit upon his own soil.

FOUR FACTS ALL SOUTHERNERS SHOULD REMEMBER.

But I must bring my message to a close. It is enough if I have made four points clear:

(1) Not only does the prosperity of the South as a whole depend upon the average Southerner, but the well-being of every individual is measured by the efficiency of this average man. Inevitably we are poorer for his poverty, richer for his wealth.

(2) The great majority of these common people of the South being farmers, Sidney Lanier was right when he declared that "an agricultural change is the one substantial fact upon which any really New South can be predicated."

(3) The possibilities of "such an agricultural change" are indicated by the fact that the average value of products per farm for the South Atlantic States is $500 less per year than for the North Atlantic, and for the South Central $538 less than for the North Central.

(4) This agricultural revolution can be brought about only by a better scheme of rural education—better both in quantity and quality; not only longer terms, but with a curriculum adapted to the needs of country children. This rural education, too, must not stop with the children, but must be carried on among farmers and farmers' wives and land owners, and tenants, and farm managers—all of these being educated as definitely as the school boy himself by means of Farmers' Institutes, and agricultural colleges, and farm papers, and farmers' clubs, and demonstration work.

In fact, it is the one immediate and imperative duty of Southern statesmen to see that in our every State a constructive and well-rounded policy of rural development is inaugurated and prosecuted, with unfailing earnestness—this being at once the most important and the most neglected phase of Southern progress.

SECTION VI.

FOREST STATISTICS.

HON. GIFFORD PINCHOT,
Forester and Chief of the Forest Service.

See Contents for Page.

SECTION VII.—EDUCATION.

PRESENT AND PROSPECTIVE EDUCATIONAL PROGRESS.

DR. EDWIN A. ALDERMAN,
President, University of Virginia.

A good test of the intellectual refinement and moral vision of a man is the clearness of his insight into the real meaning of democracy. You may give the name democracy to anything. You may call a system of government democratic, or a theory of economics, or a mode of living, or a manner of speaking. You may even call a dollar dinner a democratic dinner. But democracy itself is, in its final analysis, a religion, a faith, a spirit, whose chief commandment is that you can trust men if you will train men. This is the divinest and hardest gospel that has ever been preached to human society. The peculiar distinction of this republic is that it has tried to guide its life according to this gospel. The republic is in trouble today because it is trying to make it

possible for a gigantic industrialism, to which the opportunities of democracy have given birth, and democracy itself, to live together under the same governmental roof. The most vital and essential institution developed by the power of this gospel to advance its ideals and protect its interests is, what I may venture to call the American system of public education. There is a certain tragedy and pathos in the thought that the South, which gave birth to the first authoritative world-voice seeking to realize this gospel in American life, could not, for a multitude of reasons, become thoroughly Jeffersonian in its educational structure until this generation. It, indeed, under old conditions was able to create the State University as an inspiring educational form, to develop the private academy in most rare excellence, to achieve practical initiative in the education of women; but it was necessary that many grave obstacles be removed before it could hope to realize that perfectly correlated educational system stretching from the primary school to the University, which Thomas Jefferson enunciated, and which is still the goal of all educational efforts in America. I submit the following as a fair summary of what these grave difficulties were. I am going to claim that they have been essentially overcome. I am going to claim, further, that true progress in any direction ought to be measured as well by the distance one has traveled as by the point one has reached, and I shall claim still further that, judged by the standards, no part of the republic has in the past generation achieved truer educational progress than the States of the South, and that nowhere in all this Union does this seem a fairer chance to work out satisfactory educational scheme for the children of democracy.

1. The free public school was not possible in the South during the time when plantation life, instead of community life, was the unit; when individualism controlled state policy, and slavery obstructed communal growth.

2. The South was, and is still, rural and sparsely settled, which are the most difficult conditions for the spread of public schools.

3. The South was, and is still, bi-racial, involving a duplication of educational effort and a conquest of racial difficulties. There are in the United States 8,833,994 negroes. Ninety per cent of them are in the Southern States. The entire New England group of states contains over 7/10 of one per cent of the negro population. Mississippi alone contains 900,000, or 10.3 per cent of the whole, or thirteen times as many as the six States of the New England group. Georgia, Mississippi, and Alabama contain one-third of the whole negro population.

4. The South was the overburdened section of America. No other Americans have ever known, in its direst form, the paralysis of war and defeat. No other region among the great culture nations, ever lost in less than a decade over one-tenth of its population, three and a half billions of its wealth, the form of its society, and the very genius of its life, save a certain unconquerable courage and self-reliance. No other region, except Poland, ever knew such losses, and Poland ceased to exist. The year 1900 had come and gone before the whole South had regained its per capita wealth of 1860.

5. The South must pass from an unscientific, agricultural order, depressed by poverty and misrule, to an era of diversified and scientific agriculture, and to an industrial democracy, wherein it must regain its national consciousness in a country which, itself, was just beginning to understand what real national self-consciousness meant.

I know of no social movement in modern times, founded in a higher purpose, carried forward with greater self-reliance, steadier zeal and larger results to its credit, than the educational battle of the South since 1870. I like somehow to think that this movement began when General Lee decided not to become President of an Insurance Company

at a large salary, and became instead President of Washington College at a salary of $1,500 a year. Some fundamental things in theory and practice have been settled in this civic battle of thirty odd years. Some fundamental things remain unsettled. It is my purpose today to inquire briefly what these settled and unsettled things are, and to isolate some of them for your criticism and study. As to the things that have been fairly settled, I set down:

1st. The Southern people had the political patience and the mental equipoise not to disturb the only good thing bequeathed to them by the carpet-bag governors, namely, the provisions for popular education placed in their organic law.

2nd. They have developed an overwhelming public sentiment with the social and political agencies necessary to sustain that sentiment in favor of the education of all the people at public expense, thus making of a social system, semi-feudal in nature, a democracy in social usage as well as in political philosophy. The development of this public sentiment has been a veritable crusade or campaign participated in by Governors and political leaders, by leaders in education and industry, and by all sorts of co-operative, civic, religious, and educational organizations, not the least powerful of which have been the Women's Clubs organized to conserve and to make fruitful aroused public sentiment.

3rd. They have guided that sentiment to a point where 45 per cent of all their public revenues are expended upon education. They have increased their school revenues in the past six years $12,590,000. Two-thirds of this sum has come from local taxation, a community weapon of enormous power, formerly dreaded by property holders and hated by the people themselves. The total expenditures for public schools in the six States of Virginia, North Carolina, South Carolina, Georgia, Tennessee, Louisiana, in 1880, were $3,225,000. In 1904, the same States expended $13,000,000. In other words, the expenditure for education

has been increased fourfold. The population of those six States in 1880 was 8,000,000: the population in 1904, in this same region, was 12,000,000. The school funds increased over 300 per cent; the population increased 50 per cent.

4th. Agriculture is still the absorbing economic interest of Southern life. Seventeen millions of the Southern people live in the country. The welfare of the country child and the general advancement of rural life, therefore, has appealed to educational statesmanship as almost the chiefest task to be accomplished. By advancement of rural life, I mean making the country a more fruitful and attractive place to live in, economically, socially, spiritually. To increase the productiveness of the land upon which all of our prosperity rests, to remove the isolation and loneliness of the country by libraries, by good roads, by telephones, by touch with the great world, to increase the value of the rural child as a national asset, and to add hopefulness and vigor to the rural man and woman at their work, are now perceived to be the most vital social and educational problems of the nation. Through the consolidation of schools, through the introduction into the public schools of an industrial and agricultural program adapted to the needs of the lives of the children affected by it, through the establishment of agricultural high schools in every congressional district in three States of the South, Virginia, Georgia, and Mississippi, with the promise of such a result coming to pass in every Southern State in the next ten years, a new citizenship is being born in the country regions and small towns of the South. The needs and influence of this new citizenship are going to decide the character of the future leadership in Southern life and politics. One who knows their spirit has recently put the creed of this new type of rural citizenship into this form: "I will never vote again for any candidate for a State office who does not have some well-worked-out program for conserving and devel-

oping our rural communities, for constructing good roads throughout the State, for placing a respectable school-house and good school in easy reach of every child, for placing in every one of such schools well-trained and amply-paid teachers, and for making our institutions of charity and higher education equal to any. I am tired of hearing men talk, and of voting for men merely because they support a certain man for President and for reward for party service."

The South has developed the genius of school organization necessary to create a system of popular education in every Southern State, fairly complete as to its machinery and methods, quickened and strengthened by normal and industrial schools for both races and vitalized by the establishment in the past five years of 650 public high schools. The high school established and supported by the State, hitherto insufficiently represented in our school system, will accomplish at least three great results:

1. The boy or girl of real ability, heretofore doomed to remain undeveloped in the mass, may pass into these schools, and from them to larger service in the community, or to the Colleges, Universities, and professional schools.

2. If education should end in these high schools for such ambitious youth, the average of educated force in a community is enormously increased. It may be frankly conceded that a vast majority of the youth will terminate their training in these schools. Only 28 per cent of high school pupils ever reach a college. Therefore, local leadership must be recruited largely from such schools. The establishment of these, therefore, and their proper equipment amount almost to an epoch in American education to the creation of a new agent for the making of helpful citizenship.

3. The lower schools are thus stimulated, the colleges nourished, the whole system unified, and the maximum of individual ability inherent in the children of a commonwealth discovered and educated for the State's service.

One hundred and twenty institutions of higher learning have been revived or established, instructing nearly thirty thousand students. The establishment and rebuilding of these higher institutions have been invaluable experiences in interpretation of social needs and in self-reliance and self-sacrifice. It might have been better to have left some of them unrevived, and not to have created others. Certainly some of them stand merely as expressions of local pride, no guiding principle having determined either their location or their relation to an intelligent whole. Nevertheless, in the atmosphere about them of bare sincerity and heroic struggle, young men have been nurtured in such older ideals of a liberal education as the attainment of culture and knowledge and the exaltation of personal character. A certain honesty, ruggedness, and unselfishness pervaded their teachings. Within their walls, life seemed real and duty easy and opportunity precious. The problem of unifying and relating these institutions to each other as parts of one great process is a task of this generation. The growth of the habit of voluntary helpfulness by private citizens and the perception by the State of its colleges as forces upon which it must lean for guidance in its complex development, have widened the scope of such of these as hold in them the principle of life. Today the spirit of research and scientific investigation, and the sense of obligation to serve the community in social and economic directions, are entering these institutions and are vying with the more ancient conception of the rigid acquisition of knowledge as a ruling motive. In other words, the leisure class theory of education is being vitalized by the dynamic theory of education. The educated man must desire and have power to help others as well as to appreciate and enjoy, himself, the inheritances of civilization. Growing Southern universities have a peculiar opportunity to advance the truth-seeking spirit, to protect it from materialization, to idealize its motive in the heart of the seeker, and yet to draw near

to the people in the application of scientific truth to life itself.

In each one of these colleges, and in all of the high schools preparatory to them, there may now be seen going steadily forward a scientific movement, having in mind a purpose to strengthen their curricula, to elevate their standards, to give elasticity and scope to the courses offered in them, to the end that they may not be merely asylums for dogmas and ideas, or retreats for the enjoyment of the delights and ornaments of culture, but dynamos and lighthouses, as well, for the production of power and diffusion of light.

The combined income of all these institutions does not greatly exceed the combined income of Harvard and Columbia; but this income is growing steadily, and it is largely the result of local beneficence, or legislative wisdom. Less than 3 per cent of the $600,000,000 given in the past thirty years to education has come Southward, and not much more than 1 per cent of that sum has come to the whites. Instruction in agriculture and technology, in the virile and constantly growing land grant colleges owing their origin to the initiative of the National Government and the cooperation of the State Governments, has been carried to the point where 1,000 Southern boys are now studying these subjects, where one studied them a generation ago. Scarcely a town of three thousand population exists in the Southern States today without a system of public schools free to all. The percentage of illiteracy of the white race has been reduced from 25 per cent to 15 per cent, and of the colored race from 87 per cent to 45 per cent.

Owing primarily to the patriotic genius of Samuel Chapman Armstrong, and the human enthusiasm of a select group of patient men and women in both sections and of both races, the two greatest experiment stations in the world for the training of a backward race have been established in the South and a wise direction given to the education

of the African element in our body politic, whose training was missing the mark widely owing to unintelligent zeal for their welfare on the one hand, and a mingling of resentment and despair on the other.

The ability of this generation to recognize education as something larger than mere learning or even discipline, to perceive it as a great force moulding national character, has caused the enlistment into this field of work of young men and young women of creative capacity and exalted character, who, under other conditions in Southern history, would have instinctively turned to political and social fields for distinction and service.

The tardy appearance of these States in the field of democratic education has given them an opportunity which they will not pass by, to avoid many of the educational errors of the more forward American communities. Already one notes in their curricula an insistence upon the studies that give emphasis to the duties of men and the glory of service, rather than to the rights of man and the splendors of achievement. The whole educational curriculum reveals the mood of the Southern mind in the effort made in it to discipline the will, to understand social and economic causes, and to see the life about it, not as an atom, but as a part of a related whole.

Finally, it may be said that the South, educationally, has passed from the stage of public opinion-making to one of constructiveness and technique, and the child has become the focus of scientific concern in law and politics. General Assemblies spend one-half of their revenue and two-thirds of their time in the passage of laws touching the welfare of youth.

The leading educational measures before the Virginia Legislature of this year were these: A bill to bring about scientific equalization of taxation; a bill to bring about coordination and unity in the whole educational scheme; the development of secondary education as the nexus between

the separate parts; bills providing further facilities for the training of teachers, and a bill for compulsory education. The advent of the scientific spirit in education and in the field of economics and sociology is revealed both by the character of such legislation and by the creation of chairs of education, economics and sociology in Southern institutions. In 1895 such studies practically did not form parts of college curricula. Today no leading University is without such chairs, and the men in them are helping to shape and enact constructive legislation.

This, in briefest statement, may be called the sum of things that have been settled. It is a wonderful total for the striving of a quarter of a century. While it is true that many of them have been settled only in the court of public opinion, and remain yet to be translated into familiar realities, visible, tangible, and helpful, still all despair and hopelessness have vanished from the task. We are face to face, in Southern life, with the realization of a great system of schools covering the land, free and flexible, and adapted to local conditions, and related to each other organically as follows:

a. Free public elementary schools in reach of every home, providing industrial and agricultural, as well as merely literary, training.

b. Free public high schools, or secondary schools, practically within reach of every child—these high schools to be properly related to elementary and higher education.

c. Free Normal Schools for teachers, with the Summer School rapidly taking shape as a definite educational agency.

d. Free land grant colleges, with special reference to agricultural and mechanical arts in all the States, nourished by the State and by the general government.

e. Free agricultural high schools, whose purpose shall be to give such training in home economics and agriculture,

training as will relate the child to its actual life and give it sympathy with the tasks before him.

f. Free State universities, maintaining toward the State an attitude of helpfulness, guidance and of support that alone justifies their existence. The State University in the South is becoming a place that not only trains lawyers, doctors, teachers, and clear-minded, cultivated gentlemen, the value of which service must not be underestimated, but a place that seeks to relate closely the surest ethical and economic insights to the practical problems of State building and community development. No cry for guidance in its complex development should come out of any American State which is not met with immediate answer by its State University or its group of higher educational agencies. If a State comes to the conclusion that its public health must be conserved, or its roads improved, or its economic resources developed, or its mines exploited, or its breed of cattle improved, or the land better tilled, it has a right to seek and to find helpful guidance in these concerns from its universities and colleges.

g. Professional schools of law, medicine, and engineering.

The Southern people have made up their minds in all these matters not to hesitate, nor falter, nor slacken in their efforts, to establish such a system of training as shall be adequate for the needs of a great democracy. Many things remain to be done. Indeed, in a large sense, we have just begun, but we can claim to have constructed a working program that will endure in its essential lines. The principal problems that will face those who work at education for the next generation will center around:

1st. The development of the idea that education is one whole process and not a series of processes.

We do not clearly enough understand that elementary education and secondary education and higher education all mean one thing; that they serve for one purpose; that it is

absurd for them to be hostile to each other; that it is vital that they be interrelated with each other; and that considered as one great unit, they constitute the mightiest servant of society. Educational institutions, whether elementary, secondary or higher, are not units existing for their own glory, for the fame of their faculties, for the sentimental satisfaction of their alumni. They exist in order to yield society continual dividends of efficiency and power. Educational forces have much to learn from corporate and industrial life, in this respect, though, they have, perhaps, more to avoid.

2nd. The elevation of the status of the teachers.

Before teachers in the public schools can be erected into a body of men and women capable of rendering the service to the State that society demands of them, they must be better trained, and, therefore, better paid, and a larger consideration given them in the use of their time. It has been said that the dog catcher or the pound keeper of the city of Washington receives $1,500 a year salary, while the average salary of the grade teacher in Washington, I am informed, is only $500 a year. This would seem, therefore, to be an American problem, as well as a Southern problem, for surely the vital point in education is being widely missed when it is thought wise and just to pay him who catches vagrant dogs three times the compensation given to him or her who teaches potential children.

3rd. The attainment of real scientific school supervision in country districts.

I believe it is true that the efficiency of the office of State Superintendent of Public Instruction in the South has been increased 200 per cent in the last five years. When the same rate of improvement has been brought about in the county supervisors of schools, there will be seen a revolution in educational effectiveness.

4th. Adaptation of curriculum to the changing needs of a changing world.

The public school curriculum must show sympathy with the fact that 92 per cent of human beings must earn their bread with their hands. I believe the curriculum which children are forced to pass through between the ages of six and fourteen needs to be radically renovated, shortened, enriched, and made so flexible as to meet the conditions demanded by our complex society. It is now impossible for a young American boy to go through elementary school, high school, college, and a medical school, until he has reached the age of 26 or 27. The German boy can do it at 23 years of age, and be about as well trained. There is a certain amount of waste all along the line, but the worst part of it is between the ages of six and fifteen.

5th. Some workable scheme of compulsory education.

6th. The placing of taxation considered as a source of power for the development of education upon a scientific and equal basis. The whole scheme of taxation is unscientific, and the returns from the present method are not proportionate to the wealth of the State or community, and the burdens of it are not borne equally. Here is a great field for scientific statesmanship.

7th. A much clearer understanding of the amount of money necessary for the training of the citizenship of a great State or a great nation.

The State of Virginia is now spending over three millions of dollars annually for its entire system of education. Our tax rate is large in proportion to assessed valuation of property, being nearly 60 cents on the one hundred dollars, thus comparing favorably with any other American State. We are taxing ourselves in proportion to wealth more heavily than the State of Massachusetts. Evidently, the common sense thing for us to do is to increase the wealth to be taxed, rather than the rate of taxation. In 1906 the State of North Carolina raised forty cents on every hundred dollars for education; Massachusetts raised thirty-nine cents on every hundred dollars; North Caro-

lina spent on each child $2.63; Massachusetts spent on each child $24.89. That we are increasing this wealth along enduring and well thought out lines has been abundantly proved during this Congress. Indeed, the mere statement that our working capital today is our own accumulated wealth, and that this total of accumulation in 1908 exceeds that of 1900 by six billions of dollars, proves that we are going along rather prosperously. But it might as well be understood that it will require eight or ten millions of dollars for the State of Virginia, or any American State, with two million inhabitants, to give to its youth nine months public schools, equipped for industrial and agricultural instruction, the necessary normal schools for the training of teachers, the necessary high schools for uniting elementary and higher education, and for training for local leadership, and the necessary income for the maintenance of its colleges and universities as the leading sources of inspiration and power.

While emphasizing the enriching of the schools through the expenditure of money, let no man or woman understand that I lose sight of the main thing, and that main thing is the establishment of intellectual sturdiness, or moral persistence, of unblemished character, of an increasing elevation of standards of life, of skill in applying knowledge to the service of society, and of steadfastness and reliance upon the ancient virtue that exalts a nation's character.

If anything were needed to make it perfectly clear, this Conference supplies the proof that the South has come to an understanding of itself. It sees itself clearly as a great distinctive section, richly endowed with noble, tragic, and heroic traditions, and even more richly endowed by nature with infinite riches of mine and field and forest and stream and climate. It sees proudly its relation to the republic as a whole, of which it is an indivisible part. It has a vision of its economic destiny, and of the ways in which it must

work to realize that destiny. It perceives that in the future the great Southern financier, economist, industrial leader, will be enrolled among our great men along with our statesmen, soldiers, orators, and publicists. The prevailing mood of the South, while self-conscious of its industrial opportunities, is not drunken with sordidness, nor cheapened by greed, but aglow with a new idea of social service and a fuller concept of the meaning of its ancient dogma of local self-government. That great phrase is no longer thought of metaphysically alone, but practically. It signifies a practical program of growth, at the core of which stands the common man and his child—symbolizing the essential strength of any State—waiting to be trained for the majestic duties of citizenship and service in a free republic.

SECTION VIII.—SUMMING UP.

G. Grosvenor Dawe,
Secretary, Commercial Club, Montgomery, Ala.

If you will refer to the last page of the program, you will find there these words: "The South's great voice has spoken, not in swelling words of boastfulness; but in simple words of sincerity, declaring the gifts that the Allwise has placed in the South in trust."

Almost every man here is a business man, and therefore each man will understand when I speak of "vision." Each successful business man has vision; he sees something ahead of him, unattained; he works towards that ideal, and even though he never reaches it, the fact of working towards it brings his business up to a higher plane and helps forward the great progress of the world. This Congress is a vision; it is a vision of an unattained ideal. We have, those of us to whom this vision was given four months ago, strained towards an attainment. All of us are conscious of how far short in many ways this great event has fallen from the greatness that we had hoped for it, and yet though it is imperfect, it represents, up to this moment, the most perfect, convincing, sincere, honest declaration of the South and its greatness, that has ever been made.

Let me tell you what was the germ thought. I was recently called to work for commercial development in Montgomery, Alabama. As soon as a realization of what Montgomery and Alabama meant to the South came to me, there

came suddenly this purpose: whereas from Montgomery forty-seven years ago went out a message whose answer was struggle and agony and misunderstanding for a generation and a half, there shall go out from Montgomery a message whose answer shall reunite and bring men, North and South, to a fuller understanding of their relations to each other, and of their relations to this great nation in its growth. That germ thought was laid before the men who gathered in Chattanooga in August last to organize the Southern Commercial Secretaries Association, and the thought, being cast upon fertile ground, was nourished with other suggestions and ideas, so that before we left Chattanooga, after an all-night session, we had laid down almost in detail the very thing that has been before you as a program during these two days. But, think for a moment —it is a long cry from a resolution in Chattanooga "that there shall be a Southern Commercial Congress," to this point where we are participating in such a congress. Think upon the courage of these men. Up to this date there had never been a permanently successful commercial gathering of broad scope in the South. We knew that. We knew that failures had followed close upon the heels of effort. Yet, these men, strong in the faith that there was an immense future for the South, and strong in the faith that the world wanted to know the truth about the South, and strong in the conviction that a plain, simple utterance of what we have would bring to us the recognition to which the vast South is entitled, in that faith we stepped forward toward the task laid before us in Chattanooga, and some of us have worked almost day and night on it until this moment.

To all of us it was a serious task. Two of the members of the committee have talked it over since we came here, and we were obliged to speak in serious terms, for our bodies, our minds, and our souls were pledged to the work until it was done. We knew that once a mighty stream of influence flowed from the South; we knew that a veritable

log-jam now held back the stream; we saw the stream swelling as the pent-up waters rose higher and higher, and taking our reputations in our hands, counting no other duty of any moment, we have in this congress pulled the king-log and now stand aside to see the mighty stream move on.

I ask you to lend me your minds for a short while, as we review very briefly what has been said in these two days. Each of these utterances brought out some great basic facts of a country's development; each of these facts brought out has laid before your very eyes a foundation stone for Southern greatness such as has never been made before in one gathering in all the history of the United States.

Our program first touched upon health, because we who are working for the commercial development of the South knew full well that dread—the ill-defined dread of disease—is the most significant hindrance to the proper recognition of the South. Therefore, we did not seek for a doctor from New Orleans or Mobile or any other southern city, great and fair though their utterances might have been. We had here the Surgeon-General of the United States to tell the plain, simple truth as to the South's safety as a place of residence. He had no motive for special pleading; he had no motive to conceal any fact; he made this statement, and a statement that is true in every particle of it: "The South is as safe a place to live as any other place, provided men will take ordinary sanitary care." That simple message of his will give us who live down there a stronger assurance regarding our homes and the place where we are to live and ultimately to die; and that simple message spread throughout the North and East and West, where it is impossible for the people to remain indifferent to the vast opportunities of the South, will give thousands a new assurance as they turn their eyes longingly towards a country where three crops can be raised in one season and the cattle do not eat off their heads on the products of three or five months of growth.

Then, in one great comprehensive paper, whose significance will be appreciated more and more as the years go by, when the Panama Canal itself approaches completion, the Secretary of War, the Honorable Luke E. Wright, the direct personal representative of President Roosevelt in this Congress, laid before you certain irrefutable facts regarding the existing southward swing of commerce and the definite southward swing as soon as the inter-oceanic lines themselves have to take the southward swing. You have been shown: first, that the Gulf coast is safe to live in, and here is a man who has shown you certain factors in national development that will produce for the Gulf region itself a civilization akin to that which gathered along the shores of the Mediterranean. If I might be permitted to add to what he has said, let me ask you to look for a moment at the vast map facing me. (The Commercial Basin of Gulf Ports.) Nature foreordained a north and south movement for everything between the Alleghanies and the Rockies, and if man and Nature had worked together in the early years, when this country was settled, the civilization that fringed the Atlantic and conquered the West by an east and west movement, would with much greater facility have worked northward from the Gulf coast into the western United States. The competition of our day—the necessity for shortening the route between raw product and manufactured article, is bringing to the South a definite recognition, and, in consequence, man's own motives are exerted, not to destroy an east and west movement along the lines of earliest discovery and earliest achievement, but to add to it a north and south movement, as laid down by nature when she graved this enormous continent.

Then you heard a statistical article, showing what growth had taken place in southern ports within the last two or three decades. These statistics need cause no jealousy in New York, in Baltimore, in Philadelphia, or in Boston. We shall simply, in the southern ports, handle that to which

we are normally entitled. The greatness of these great Atlantic ports north of Mason and Dixon's line will endure forever, but not all of the greatness that belongs to the enormous eastern and Gulf coast line of the United States ought to remain within the fraction of coast line extending from Portland, Maine, southward. We have shown that in the last ten years the Gulf ports gained 140 per cent in imports and exports, that in the same ten years the Atlantic ports gained 50 per cent. These figures sound significant, but they need cause no tremor in New York, Boston, or Philadelphia, for the simple reason that 140 per cent gained on what we were still leaves us small in comparison with their supremacy.

Naturally when our thoughts were turned toward harbors and ports, the feeders of those harbors and ports become important, and, therefore, the Honorable John A. Fox, Field Secretary of the National Rivers and Harbors Congress, has described the peculiar importance of the waterways of the South. In fact, if you will glance at this may (indicating the navigable streams of the United States) you will see that if you placed your two hands over that which we call "South" you would have covered nearly all the navigable waterway ramifications that lie outside the northern portion of the Mississippi and Missouri rivers. So, it was pertinent that Mr. Fox should emphasize what we have in the way of waterway possessions; for these waterways, chained to man's service, are destined to enrich the ports already there and ports hereafter to grow into being—enrich them and load them with the raw products and the heavier manufactured articles of a region of unexampled mineral riches. The port of Mobile has, lying up in the hills north of it, eight thousand square miles of coal and ten billion tons of iron ore. New Orleans has lying behind it the vast Mississippi valley, the richest stretch of civilized country that human mind is acquainted with. These two ports are merely mentioned as significant of a

commerce yet to grow immensely at all southern ports by the movement of bulky freights on the gradual gradient of the rivers downward to the sea and out to the world.

The natural sequence, when we talked of the means of transportation laid down by Nature, was to move to a consideration of the transportation means perfected by the inventive genius of man; and so the Honorable John F. Wallace, of New York, was invited by the Committee to take this important subject because he is not connected with any southern railroad and because his record as an engineer is without question in the eyes of the engineering world. This man has solemnly assured us that transportation is as vital to the development of a country as are the veins and arteries absolutely necessary to the happiness and health of a body. He has shown us that which few of us stop to think or realize that if we close the arteries, if we construct the arteries, if we try to do away with the arteries, we are compelling death to fall upon development. Mr. Wallace was for thirteen years the Chief Engineer, and higher, in connection with the Illinois Central Railroad. Then he was selected to be the Chief Engineer of the Isthmian Canal Commission. Mr. Wallace has had to do with all the greatest engineering thought of the day. Therefore, what he says must come with solemn force upon every man less familiar with the subject. He declares that the South needs one thousand million dollars at this very moment in order to lead to a railroad development at all commensurate with the demands of commerce hereafter to be based upon the resources of the South; and, very pointedly and very appropriately, he says that unless that money can be shown to be a good investment, it will not be invested, it will not come to the South; the South will not develop as it ought to do through increased transportation. It is neither the time nor the place for me to say a word in relation to corporations and the duties that they owe to the body politic. It is not the place to argue for or against any legislation

that may appear to have been prompted by a narrow view of the situation. It is merely my place here to emphasize the one strong point brought out by such a thinking man, and that strong point is so utterly reasonable that it must appeal to every other thinking man. "The needs of the railroads are the needs of the South."

Follow me now through the two succeeding speeches, intimately related—so intimately related that without the one we cannot have the other—the speeches in relation to the Appalachian forests and the water powers of the South. In a Congress whose papers have been of a peculiarly thoughtful and high grade, every one of the papers laying down in truth certain great facts that cannot be refuted, I believe I do no damage to anyone by declaring that the paper of Mr. Washburn set before us all a new idea of the meaning of water powers, of the importance of water powers, and of questions of statesmanship involved in their perpetuity. And, then, he was immediately followed by the Honorable Gifford Pinchot, who is pledged to the forest cause, showing the commercial significance of the Appalachian forests, and showing that the maintenance of those forests meant to the Appalachian range nearly five million horsepower every second of every day forever and forever. Mr. Washburn showed that white coal is inexhaustible; Mr. Pinchot showed how the white coal can be maintained in a comparatively even flow.

Then our talk was turned to the black coal laid down in the ages when the earth was uninhabitable, and being prepared through the aeons for the use of man. Professor Glenn showed that a combustible material like coal cannot anywhere or under any circumstances be spoken of as inexhaustible, and he showed us that which too few of us realize, that when the power is gone out of the coal and the mighty sunshine buried in those black cubes has gone back to its giver, we can never get that power again; that coal is gone and gone forever. If, therefore, we have re-

gard for the future generations and a desire that posterity shall rise up to call us blessed, we must conserve instead of wasting, and we must help it out by every such means as was suggested by Mr. Washburn and Mr. Pinchot.

Coming now to the short but extremely serious article by Mr. Eckel, whose standing as an expert in iron is without question in the United States, we were led to see the intimate relation between coal and iron, and, if I might be permitted to add some few thoughts to those expressed by Mr. Eckel, we shall be led to see the intimate connection between iron and civilization. The test of civilization is how thoroughly we can appreciate and use the gifts of Nature. Time was when men split with stone axes; then some inventive genius discovered something harder than stone—the minerals that were buried in the stone, and from that moment of discovery up to now this wonderful iron age has grown in importance and significance, until the test of a nation's commercial development lies in the use that it makes of iron. And what might Mr. Eckel point out? That thirty years from now the hope of practically the whole United States for this absolute necessity of civilization lies in the South. He has stated that already we have evidence of ten billion tons in one geological formation. Ten billion tons may last 150 years at the present rate of usage. He therefore meant that one hundred years after the Lake Superior region is forgotten, the South will be providing its quota of iron for the maintenance of the American civilization. Yet, with all our riches, what are we producing? Dr. Hayes pointed out, as you will see in this great diagram (General Mineral Wealth of the South), that the South so far produces annually out of all its riches in iron only ten per cent of the total output of the United States. When you realize, therefore, that the stupendous growth of Chattanooga and Birmingham and other cities in the South, based upon the manufactured forms of iron, rests, so far, on only ten per cent of the total output of the United States, what

shall the growth and development be when the whole hope of the United States rests for large output within those southern states? The close attention paid to the paper by Dr. C. W. Hayes, Chief Geologist of the United States, was indication sufficient of what I might call the novelty of the idea presented by him. Too few of us in the South or elsewhere realize the remarkable diversity in mineral riches in the South. We are almost like Indians who walk unconsciously across silver mines and gold mines, who know nothing whatever of the potentialities beneath their feet. Mr. Hayes has rendered to the South a great service in that he has opened the eyes of all of us to a variety, and, in some cases, a monopoly, and to a productivity along general lines of wealth that means for the South an enormous commercial development as civilization brings into demand these various substances. I ask you, before you leave, to fasten upon your mind certain great facts in this diagram prepared under the direction of Dr. Hayes. See five or six substances of which we have the practical monopoly, and, therefore, the world must turn to us for those substances and can turn nowhere else.

The paper by the Honorable D. A. Tompkins emphasized to us, and more particularly to those of us who do not live in the South, the peculiar advantage resting with the South in the matter of cotton. This map (from the Census bureau) shows that positively no cotton whatever in the United States grows outside of the Southern States. Mr. Washburn has shown that cheap power to manufacture the cotton rests within the Southern States. The combination of power and cotton means a vast cotton manufacturing development in the South, whose end is not yet. The Census bureau has indicated here that in ten years we increased 254 per cent upon ourselves in the matter of cotton transformation. Therefore, we may safely regard as a sure outcome of future effort to reduce the length of line between the raw product and the manufactured article a still

greater development of cotton manufacturing in the South. We have the temperature to produce the crop; modern invention has enabled us to modify the atmosphere to any degree of humidity, we have the power, and our ports will provide the outlet to the consuming world. The conclusion, therefore, of Mr. Tompkins that the outlook of the South in relation to the cotton monopoly and cotton manufacture is solid and assured, cannot for a moment be questioned.

Then, gentlemen, you listened to another man who knew whereof he spoke. Mr. Oliver is a contractor whose name ranks high for large achievements, and because of the importance of the works he has undertaken, our Committee thought that no man could more wisely speak for the South in relation to building materials than he. He did not emphasize those building materials as being the exclusive possession of the South, for that would have been unreasonable. He simply pointed out what gifts of nature there are resting unimproved within these States, too often thought of, by those who know them not, as States of marsh land, swamp, alluvial soil and malaria. He referred for a moment to the tendency of the cement production to centralize itself, not in the matter of forming a trust, but in the matter of utilizing certain advantages that Nature has given; and while the whole United States has in many of its parts the material for making cement, he pointed out certain peculiar advantages belonging to the South that will have a tendency to centralize in the South the cement production that seeks its outlet through the Gulf or the South Atlantic ports. Glance, if you will, at this map of Alabama—that pale green streak across the map indicates Selma chalk. Selma chalk needs but an admixture of eight per cent of clay to make a high-grade cement. That layer is from ten to thirty miles wide. It is 150 miles long within the State of Alabama itself, and in some cases that layer is a thousand feet deep, and if this were not sufficient to justify a cement industry

throughout the central portion of the South, it is merely necessary to point out that two great navigable rivers thread in and out through this immensely rich layer of cement material.

The Committee of Arrangements, in planning for the two other subjects to be treated in the regular program, had in mind certain important elements of the southern renaissance. The admirable paper by Clarence H. Poe, a son of the soil, a farmer's son, who is now turning his whole purpose toward making better farmer's sons, was the first of these two elements of renaissance. To simply scratch the soil time after time, in the same manner that our grandparents did and merely because they did it, is not agriculture, it is not growth, it shows scarcely any more reflection than the burrowing of a water rat to find a root. Mr. Poe pointed out hopeful elements permeating the whole southern agricultural world, elements that will lead men to trust less upon one crop, to trust less upon faithful adherence to traditions in farming and to strike out more boldly, more freely, into the great field of social development that will some day be seen to lie untouched beneath the farmer's hand. Mr. Poe rightly pointed out the importance of the farmer in the social fabric, and just as wisely pointed out the importance of the consumer to the farmer, and he showed, just as has been shown all through this Congress, the solidarity—the unity of interest that should bind all classes together in one feeling of intense patriotism.

The Committee arranged that the last subject taken up should be education, and their choice naturally fell upon Dr. Alderman. In their plan they spoke of health as the Alpha of the program, and of education as the Omega, for between that beginning and ending have, up until now, lain unrecognized, unappreciated, and in some cases condemned, all these marvelous resources of the most gifted section of the United States. So, we felt in planning this program, which is intended to make Southern commercial history,

and, in fact, perhaps add to the history of the United States, we planned that health should first be shown in its true light, and education also, for, without these all other commercial development is vain. If manufactures multiply, if wealth multiplies, and men themselves still remain simply dormant, human animals, all our civilization and our progress is vain. There must come to the South a greater realization of itself, a greater trust upon education of the highest kind, a greater sense of unity with the whole United States in all its problems and aspirations, for the South itself is already feeling the spirit of life along the lines of trained hands, trained hearts and trained minds.

A few moments more and I shall have finished a summing up, placed upon my shoulders by the other members of the Committee, not through my seeking, but because there is perhaps a fitness that a man situated as I have been should occupy this important moment in the history of the Congress. If I spoke as a man of the South, there might arise in the minds of those not of the South a feeling that all this declaration was colored with a natural boastfulness, based upon a bias in favor of a home land. I am not of the South. At the same time, if a man should speak in the summing up of southern resources and come to this great task as a child of the North, there is a possibility that to some men of the South, not yet able to see as wisely as they ought to see, there might come the thought of an impertinence in a Northerner coming to show to the South its riches and its gems, and its diadems of power. I am not of the North. The stock from which I come is the stock which peopled the New England coast, and that peopled the Georgia and Carolina and Virginia coasts—the English stock. Twenty-five years ago I came to this country as an immigrant. For twenty years I labored in the North, a close student of affairs, in fact, in some cases a participant in public affairs, traveling here and there, understanding the resources of the United States—my particular

line of business latterly compelling me to do so—and here in the post maturity of life I have come to the South to lay whatever gifts I have upon her altar. So, in interpreting the South, there is absolutely absent from my mind any bias, either one way or the other. I love the United States, for this country has for twenty-five years been my foster mother; I love the thought of its development, and because I love to see things as they ought to be, and I despise the god of things as they are, I have turned in these later years my whole strength toward aiding a development of the Southern States that shall be commensurate with the gifts of the States, and that shall not make that region ashamed when comparison is made between the earlier settled portions of the Union and this vast empire of riches lying at this moment south of us.

Now, what shall this Congress result in? Will you men go back home and be just the same men that you were before? Will you go back home and fill your thoughts and use your strength on things, important in themselves, but not realized as related to the development of a great region? Or, will you go back, every one of you, to your own home, fired with a new belief in the South, absolutely convinced beyond all argument that the South is great in its gifts, and that the South shall be greater in its accomplishments? Those of us who have spent weeks, toiling night and day to make the knowledge of this movement spread through the whole South and bring this magnificent audience here, would feel that our work had been in vain if men simply went out from under the sound of this Congress and were the same as before. It is not enough to merely speak of the material greatness of the South—gross materialism will not make a great nation. There is an ethical principle underlying this Congress. It is that our men shall be greater in their daily affairs; that they shall be greater in their thought; that they shall radiate around them a feeling of a greater South bound to come, so that the whole public body

begins to realize the thrill of possibilities that belong to the South. If the thought is simply to fill the pocket, to swell the bank account, again the labor of the Committee will have been in vain. A man's service to his day and generation is not measured by the size of his pocketbook, or by the figures that he can put with honesty on the face of a check. A man's value to his day and generation is measured by the service that he is willing to render publicly, and we men who have worked on this project expect the men who have been here in attendance upon this Congress to go home not merely determined to make a great commercial world south of us, but themselves pledged to a more active and sincere participation in public affairs. We expect them to feel ashamed if the largess of the Almighty so conspicuously showered upon the South does not stir to a higher and more deserving manhood. We expect our men to bow at the shrines of their fathers, and rise up glorified with the belief that this day has its summons to heroism and personal devotion to duty, just as clear and unmistakable as the clarion call that sounded in the testing time of our nation's cohesive power. The clarion call of this Congress is "Men of the South, this day calls upon you to live for the South because the nation needs a greater South."

SECTION IX—THE PROCEEDINGS CONDENSED.

FIRST SESSION 10 A. M., DECEMBER 7TH. CHAIRMAN, HON. OSCAR S. STRAUS.

INVOCATION.

REV. ALFRED HARDING, D. D.,
Bishop-Elect of Washington.

Almighty God, our Heavenly Father, the God of our fathers, whose guiding hand hath brought them safely through the perils of the great deep, and through the trackless wilderness, and who hast enabled them to plant and to sow and to reap and to build, and to lay the foundations of the great States which are represented here today.

We bless Thee for all Thy goodness to us in the past, and we beseech Thee to teach us to know that all good gifts and all perfect gifts come from Thee; that we owe to Thee our spiritual and mental powers, that we owe to Thee all the great gifts of Nature, which thou hast so lavishly bestowed upon us.

And we beseech Thee, O Lord, to bless this country of ours, all in authority and all our leaders, that they may have wisdom to rise to the highest pitch of patriotism; and all our teachers, that they may lead us to perceive and know what things we ought to do, and that thou wilt give us grace and power faithfully to fulfill the same.

We ask Thy special blessing upon this Congress and all its deliberations, that it may redound not only to the benefit of the South, but to the whole country and to all the

world, because we know that when one member suffers all the members suffer with it, and when one portion of our country is blessed and uplifted the whole country and the whole world is benefited.

We beseech Thee, Lord, to give us the spirit of wisdom and knowledge and understanding, and that Thou wouldst guide all who are to speak to us, and send their utterances far and wide and bless them, for the uplifting of Thy people, that we may realize that the blessings that thou hast given us are to be used and not abused; and that it is our duty to think not only of ourselves but of future generations, that there may be peace and happiness and joy and blessedness throughout our land through all time.

Direct us, O Lord, in all our doings, with thy gracious goodness, and continually help us, so that when our works are ended in Thee we may glorify Thy holy name and, finally, by Thy mercy, obtain everlasting life.

We ask it all in the name of Him who hath taught us to pray; Our Father, who are in Heaven, hallowed be Thy name; Thy Kingdom come, Thy will be done on earth as it is in Heaven. Give us this day, our daily bread, and forgive us our debts as we forgive our debtors. Lead us not into temptation, but deliver us from evil, for Thine is the kingdom, the power and the glory for ever and ever. Amen.

SPEECH OF HON. OSCAR S. STRAUS,

Secretary of the Department of Commerce and Labor.

I deem it a high privilege to be called upon to preside over the initial meeting of the First Southern Commercial Congress that has been called. It is a peculiar pleasure, for I recognize myself—and I hope you will allow me to do so—as being an old Georgia boy myself. (Applause.) I knew the Old South, and I passed through the painful years of the Civil War. I know how devastated and pros-

trated the South was, and, therefore, I know how to appreciate the wonderful progress that has been made in the last forty years. Last spring I had an opportunity of visiting my old State and of going from one side of it to the other, and I was astonished to find the wonderful advance, the progress, the aggressive pushing forward that was evidenced on all sides.

When the gentleman who had charge of the initial steps out of which this Congress grew, called upon me, there was one thought in my mind which was this: I was glad to see a movement for the purpose of bringing together for consultation, for study, and for alignment with the great commercial interests of the country, the commercial interests of the South, and because I did feel such a deep interest in this movement, I referred to the fact that I hoped that the purposes, the objects in view were to bring the South, its commerce and its interests together with the great commercial interests of the country, and the gentleman who had charge of this work of organization assured me that would be the purpose.

The South of old was peculiarly agricultural. Its main staple was, in fact, one agricultural product, and, such being the case, the East and North being largely industrial and manufactural, there was an economic division, and that economic division or sectionalism, of course, had its differentiating effect, and probably and undoubtedly had some effect in a division and a sectionalizing of the South. But, in the last forty years times have changed, conditions have changed, industries have changed, immense progress has been made. We are at the crest of a great commercial era (applause), and the South, economically, commercially, has come out from its sectionalism (applause), and it has an opportunity and an important opportunity and a growing opportunity. (Applause.)

I wish to refer only to a few figures in reference to the

manufacturing development of the South which, I know, are familiar to you but are not as familiar to the public at large as they ought to be. In 1870 the product of the factories of the South amounted to 165 million dollars. In 1905 that product had grown to the enormous extent of $1,130,000,000. (Applause.) In the last five years the increase in the manufactured product of other parts of the country has amounted to 28 per cent, whereas, during the same period, the increase of the manufactured product of the ten Southern States has just doubled—56 per cent. (Applause.) The South has broken away from its solidarity commercially, industrially, and economically, and I am one of those who believe that the time is near at hand when, even politically, it will be a misnomer to speak of the Solid South. (Applause.)

Commerce is not confined to State lines; it is not sectional, it is national, and the commerce of the South is as far reaching, as broadening, and as extensive. What is for the interest of the South is for the interest of the Nation (applause), and what is for the best interests of the Nation is far the best interests of the South. (Applause.) Now, it depends upon you men of commerce, who understand thoroughly this economic and business possibility to which I have referred, to so guide your statesmen, your representatives in Congress, to understand that the South neither wants nor asks any special privileges; that her interests are tied up with the interests of the Nation, and that when great commercial questions come up for legislation, it is a mistake, and an unbusinesslike mistake, to apply to these principles either sectional ideas or petty politics. (Applause.) The prosperity of a country depends upon commercial and agricultural industries and navigation. Without proper navigation facilities, the foreign commerce of a nation cannot be properly conducted. It is handicapped. Now the great question is not whether we people need free ships or protected ships, but we do believe in having ships

to carry our commerce. (Applause.) It is not a theory that I wish to call your attention to, but it is a condition. There is now before Congress a bill—the Extension of the Postal Subsidy Bill. In 1891 a law was passed giving a postal subsidy of four dollars an outward mile to certain lines of ships that traveled twenty knots per hour and over. It has had a very good effect, but it has not had the effect of carrying our mails, our passengers and our freight to the South, to the twenty great South American republics, nor over to the Far East across the Pacific ocean. All of the commercial nations of the world give some sort of help to their shipping; I say *all*. Now, it is the part of the Government to carry its mails from one end of the country to the other, and it is just as well a part of the duty of the Government to carry its mail to foreign countries. To the south of us there are twenty republics, with a population of 70 millions and a tremendously growing commerce, and foreign commerce amounting to 21 million dollars—How much of this commerce have we? We have only 23 per cent of it. Why? We are exporting largely to other parts of the world. Products that we manufacture and produce are demanded there. I will tell you why. Because our shipping facilities are almost nil to reach these countries to the south of us. We reach them by the way of Europe. This ought to be and must be corrected, and the sooner it is corrected the better for the foreign trade of this country.

Now, it is not a sectional question, nor is it a partisan question, except in so far as that the Southern States will probably be more benefited in proportion if we have lines of fast steamers plying between here and the southern continent, because the Southern States are nearer thereto. (Applause.) This very question is of the highest importance for the consideration of your Congress, and I hope you will take it up, and I am sure when you do you will find precisely what I have found; that it is not a question of tariff or a question of free ships, but it is a concrete question:

How can we best attain the end in view, so that we will have proper ocean transportation between us and the 70 million people to the south of us? Let those who wish to indulge in theories indulge in them. Commerce is a very practical affair, and takes the remedies that will bring about the results it wishes to accomplish. I am sure that when this subject is properly considered—and many of you understand it now—you will find that if it is a partisan question, its partisanship consists in the fact that it will bring greater benefit to the South than to any other portion of the continent. (Applause.)

I am sure my estimable colleague in the Cabinet, the Secretary of War, will bring before you instructive information regarding the Panama Canal, its effect and influence upon the commerce of our country and upon the commerce of the world. He will perhaps refer to this great subject of having better facilities for the carrying of our commerce and our mails than we are now suffering from, in fact, are almost handicapped and bankrupted by.

There is one other subject that I wish to bring to your attention, and it is this: In the last twenty-five or thirty years, with the growth of commerce—call it, with the development of commercial spirit, by which I mean the spirit of commerce, among all of the leading nations of the world—and, by the way, we need not decry the commercial spirit. It is not a mean or low spirit; it is the highest and noblest spirit that has ever actuated the nations, and I will tell you why. The so-called religious spirit brought nations into bloody conflict in order to dominate each other in the name of religion? No, it was not that. It was simply ecclesiastical contention, because true religious spirit does not promote conflict. Then came the spirit of conquest that actuated and permeated the nation; growing big by robbing the weaker nations of the world, which culminated in the infuriated heroism of the Napoleonic era. But with our time came a new spirit. The grievances narrated by the Declara-

tion of Independence are largely commercial, and upon it rest the great moral principles of our Government. Commercial principles are more likely than others to involve the great principles of government, because the true commercial spirit is founded upon right and justice. (Applause.) The commercial spirit is a noble spirit, because it is founded on mutuality. It gives *quid pro quo*. You cannot trade with your enemy; you must trade with your friends, and the farther and broader this great spirit grows, the more incentive does it carry with it of peace and good will among nations. The commercial spirit is a high spirit, is a noble spirit, is a spirit that contributes to the prosperity of a people, and raises the standard of life and living of the masses.

A year or more ago I directed attention to a very important fact, as it appeared to me, that our commercial rivals in the marts of the world, such as England, France and Germany, were able to render an enormous assistance, because they had brought about a co-ordination between the governmental agencies having to do with commerce and the great commercial bodies. Of course, in some of the nations of Europe—such as Germany, and more especially in France, the commercial bodies are semi-official bodies. That is not necessary with us, but what is necessary is to bring about a proper co-ordination between the great commercial interests of this country and those departments and agencies of the Government having to do with commerce and the promotion of commerce. So I called together the representatives from some forty different commercial bodies to consult with me—to guide me as head of the Department of Commerce and Labor—how to bring about an intelligent and efficient co-ordination between the great commercial interests of the country and the Department of Commerce and Labor, the State Department, the Agricultural Department, the Treasury Department, and all the departments of the Government having to do with commerce. I consulted with my several colleagues. They all agreed

with me that there was a deficiency there; that there was a weakness there; a lack even of a method of finding out what it is that the commercial interests demand and what is best for those interests. These representatives met with me. I laid before them the state of the conditions in Germany and one or two other countries, and an organization was effected called the National Council of Commerce. Their first annual meeting will be held here in Washington next Thursday, the 10th of December, and I am happy to tell you, gentlemen of the South, that among the first commercial bodies to respond to this invitation were several commercial bodies from your leading States. (Applause.)

It is of the highest importance that the commercial bodies of the country should have a paramount Bureau here in Washington that should be in daily touch with the departments of the government having to do with commerce. It should not be a talking committee or a banqueting organization, nor a resolving organization, but it should be an effective business office that will send out its information as it receives it from the various agencies of the Government to the various merchants and manufacturers and commercial organizations that are especially interested in the questions as they are developed. (Applause.)

We receive important information almost daily from the consuls of the United States throughout the world. This information is of such a nature that it cannot be published, for the reason that, true as it is, it might cause some irritation here and there, or make it unpleasant for our consular representatives, and so they must be held confidential. The nations that I speak of that have this co-ordination are able to give it out, this confidential information, to such of their commercial or manufacturing interests as are specially interested in the subject. We have nothing of that kind. But this Council of Commerce will supply the missing link, and a valuable link it will be.

A word more in conclusion, for I fear I have taken too

long already, and it is this: You gentlemen of the South, you merchants of the South, you are showing the right spirit. A merchant is progressive; he looks forward. The memories of the past remain, but they are allowed to be shackled that they shall not prevent our marching forward. The New South looks to the future, and its face is turned that way; and so, clasping hand-in-hand in these national commercial organizations which know no section and no limitation, let us take up the great industrial and commercial problems together, for together they are ours to meet, to solve, and to prosper by. (Applause.)

The Chairman: The next subject will be Southern Health Conditions, Climate and Temperature, by Dr. Walter Wyman, Surgeon-General of the U. S. Public Health and Marine Hospital Service. (Applause.) I have the pleasure of presenting to you Dr. Wyman, whose position is one of the greatest responsibility in the Government, the head of the great corps of physicians to guard our country from the ravages of disease. Ladies and gentlemen, the Surgeon-General. (Applause.)

(Here Surgeon-General Wyman spoke.)

Portion of Statement
Made by G. Grosvenor Dawe,
Chairman of the Committee of Arrangements.

The exhibits in the next room are intended to lay before those who come from the North and the South, the East and the West, a graphic presentation of some of the great facts of the South. The Post Office Department has prepared diagrams in relation to the increase of rural free delivery, indicating therefore the importance of roads. Some men here come fresh from the Good Roads Congress in Georgia. The feature of roads is thrilling throughout the

United States, because the roads really are a test of civilization. In that same room will be found geological maps so that men who are unfamiliar with the South can spend an hour or two around there and understand what are the great underlying geological features of the South. There are there exhibits from towns and cities, and to you who are from the North and East, some of those exhibits will be a surprise. Take my own little town of Montgomery, Alabama. It is perhaps thought of as a sort of country town. We have skyscrapers there which would not be unworthy in Washington or New York City. These things are not understood, and, therefore, this Congress is here to make the country understand that the South is growing, rising, and an essential part of the great country.

These rooms will be open at all hours until tomorrow at midnight, and I believe they will repay any time that is given to their study.

MR. STRAUS: I need not present to any Southern audience the Secretary of War (Applause)—General Luke E. Wright. (Applause.) He will talk to you, not from paper knowledge, but from actual knowledge, on one of the most important topics that is today uppermost in the American mind, "The Influence of the Panama Canal on the Industrial Development of the Nation." Ladies and gentlemen, General Wright. (Applause.)

(Here Hon. Luke E. Wright spoke.)

SECOND SESSION.

2 P. M. DECEMBER 7.

Chairman: JOHN M. PARKER, NEW ORLEANS, LA.

REMARKS BY MR. PARKER.

I deeply regret that the sudden illness and sudden death of Mr. Werlein's father-in-law prevented him from having the honor of presiding over this meeting, and prevented you from having the pleasure of listening to an able, direct talk that I am certain would have appealed very strongly to you. When I stand and look at that map (The Commercial Basis of Gulf Ports), it means a great deal to a man from away down at the other end of the river to be able to come here and talk to you and talk from the heart, and with your permission I am going to tell you a few things with which I do not know whether you are familiar or not.

First, we are the greatest sugar State in the United States, and down there in Louisiana we raised over 94 per cent of the entire sugar product raised in this country. We are easily and largely the greatest section of this country, raising annually down there now nearly four million barrels of rice. We are down there, in recent years, the largest producers of sulphur, producing 98 per cent of the entire sulphur produced in this country, and a total of nearly 350 thousand tons, and of sulphur that is so pure that it has created comment, and almost international trouble, due to the fact that, as I understand, it is 98 per cent pure, just as it is pumped from the ground by hot steam. And you will see it in great mountains standing there where it is being sent from our State to all sections of the world.

We have the finest pine forests in this country, and, in addition to that, I suppose today Louisiana represents and has more cypress than any three States in the United States left standing.

That, briefly, is an apology for our possessions down there, which, in the course of the next few years, when we have completed, as we intend to do, that great deep water way from the Lakes to the Gulf, and at the same time, we building that Panama Canal, instead of being almost unknown away down there at the southern end of that great river, I think you will find New Orleans will be one of the largest and most progressive cities in the United States, heartily welcoming and in hearty accord with the wishes of every city in the South. (Applause.)

The title of this organization, I fear, is a misnomer. It is headed, "The Southern Commercial Congress," and I think in the last ten years every thinker in the United States has seen enough to know that the advantages of the North or the South or the East or the West are absolutely kin (applause), and we ought to call it, "The National Commercial Congress." I can speak from feeling and from the bottom of my heart in connection with these matters, because fifteen years ago, when I first had the honor of coming to Washington to take an earnest part in asking for assistance for our rivers down there, asking your Congressmen and your Representatives, of the North and elsewhere, to lend us a helping hand to protect us from the flood, not from our own headwaters, but from the headwaters of 29 States that send us their headwaters, due to the marvelous movement in the reclamation project, your ditching and your draining, and the doing away with your forests. It was almost a case of coming here and making a perfectly vain appeal. One received a very poor audience, and very, very little sympathy was expressed for us anywhere or in anyway. But now, I care not from what section of the United States you come here, you will find that the citizen from California, the citizen from Maine, or New York, or Louisiana, or Illinois and Minnesota gladly get together and work earnestly for the benefit and development of the whole country. (Applause.)

With this, the incipiency and the birth of a new organi-

zation, an organization that holds this, its first meeting, but which at the same time is an organization that is full of great possibilities for every section of this country. I think that we find today more and more an absolute elimination and obliteration of all sectional lines. We find that the rivalry between the great States is not of a personal nature. All are glad, and all are rejoiced to see the other States upbuilt and benefited.

Less than two weeks ago, in New Orleans, a group of prominent business men—financiers, bankers and others—came over from the city of Chicago, and their statement when we welcomed them down there was: "We are not down here to partake of any of those things. We are down here to know you; we are down here to know what you want; we are down here to ask how we can help you, and we desire to assure you that we will put our shoulders to the wheel, and help you all we can in every way." (Applause.) Gentlemen, that we all want to do, irrespective of organization. We feel that this organization is getting down to do a great national work, to help and to assist to upbuild every section of the country, irrespective of the fact whether we are benefited. We believe it is our duty, every one of us, to get down and lend a helping hand and do all we can to get the Government of the United States to note meritorious projects, and to see that they are pressed forward to a successful consummation. I thank you.

(Speech of Hon. C. P. Goodyear.)

(Speech of Hon. Jno. A. Fox.)

(Speech of Hon. John F. Wallace.)

THE CHAIRMAN: The concluding address of the afternoon will be delivered by Mr. J. Ferris Cann, of Savannah, Georgia. Mr. Cann says that it is an impromptu address, but I am certain that it will be a most interesting one. (Applause.)

Mr. Cann said:

MR. CHAIRMAN: Answering a summons received only a few hours ago, I have had no opportunity to prepare an address. I should have declined to speak had I not been impelled by that public spirit which is an essential element in the make-up of every good citizen not to refuse to do my part in any movement for the betterment, advancement, or progress of my country. When I say my country, I mean the United States, for the development of the South and its greatness means prosperity for the United States.

The subject which is to be discussed by me, Ports of the South and Foreign Trade, is so vast in its scope, so important in its development, that it is impossible in so short a space to faithfully portray its merits or set forth its benefits.

To reach a concise understanding of the situation, we must look back through the Annals of American Commerce to the early days when prophetic wisdom pointed to the channels and harbors of the South and the great navigators selected them as the safest and most advantageous ports for naval and commercial operations.

The lapse of years shows that no better waterways of natural depth, or geographical location have been found than those of the Southern States, although millions upon millions have been spent upon improvements of other harbors and tremendous efforts have been made to divert the maritime traffic to ports farther North.

Ports are the great gate-ways through which the Commercial world is fed and nourished. A great port must have, in addition to the water or harbor, its port facilities—ample transportation facilities and a fertile and productive tributary country, such as the South—endowed, as she is, with a rich prodigality of mineral, agricultural and commercial possibilities—offers.

It is generally conceded that no better waterways or safer anchorage for vessels of heavy tonnage can be found on the shores of North America than those of Baltimore, Nor-

folk, Charleston, Savannah, Brunswick, Fernandina, Pensacola, Mobile, New Orleans, and Galveston.

It may be interesting to you to know, without burdening you with statistics, that the Southern ports, today, in proportion to the population of the port, do a much larger business in export valuation than the great ports of New York, Philadelphia and San Francisco. Savannah, with a population only one-twentieth as large as that of Philadelphia, exports in value more than Philadelphia, besides contributing many millions to Philadelphia's exports by sending products by coast-wise ships to Philadelphia for export. Galveston, with a population of about one-hundredth as great as New York, exports in value more than one-fifth as much. Both of these Southern ports far exceed San Francisco.

In 1880 there was exported from the South $265,000,000 of merchandise. Its exports in 1908 had increased to $649,000,000, or 140 per cent, while the increase from all ports of the United States during that period was only 120 per cent. From which comparison we can easily comprehend the advances made in the South Atlantic and Gulf ports. This means that the Government must recognize the urgent need of developing this great National asset in lending material aid to the Southern ports. It has been demonstrated in Savannah (my home) that for every dollar invested in the improvement of this harbor by the Government there has resulted to commerce an increase of $15 per annum.

But, Mr. Chairman, while it can be argued that the export business is the more profitable on account of sending goods out and bringing gold back, and while the exports at Southern ports have increased wonderfully, yet there should be a united and co-operative movement on the part of all men of affairs to develop the Southern import trade. At the present time the great bulk of imports is brought in through the Northern and Western ports. When we send vessels out laden with raw products and manufactured ar-

ticles of the South we should bring them back laden with the goods of the foreigner. South America and the East offer today splendid opportunities for business with the South.

The Panama Canal is no longer the dream of the theorist, it has been snatched from the mist of vague possibility and brought within reach of accomplished fact by that genius of strenuous and well-directed industrial achievement, Theodore Roosevelt. This Canal will shortly become a water-way between the two great oceans, bringing the trade of the Orient to your doors. Its possibilities are patent—your ports must be prepared to handle the business. It is for the commercial thrift and intelligence of the merchants of the entire country to take advantage of these great possibilities, which must be handled through Southern ports, to join together and assist us in the preparation. Twenty-one per cent today of the cotton goods manufactured in Georgia are sold in China and Japan, and it has been suggested by some one that if the Chinese could be induced to lengthen his shirt two inches it would require a crop of twenty-five million bales of cotton to supply the world's demand. What must the business increase to when the canal is open?

Mr. Chairman, and gentlemen of the Congress, the future of the Southern ports is in your hands. While the increase of commerce at Southern ports during the past twenty years has stirred the wonder and excited the admiration of the commercial world, yet a great deal remains to be accomplished.

You are to be congratulated upon this united effort that signifies the intention of the Southern business men to keep pace with the progress of American industry. I feel proud as I look at the statistics of the advance we have made in the South in the past ten years, as it is conclusive evidence that we are rapidly taking our place among the world's centers of commercial activity.

Its further advance through the development of its port facilities and its foreign trade can only be excelled by the general prosperity which it will bring, not only to the South, but to the entire country.

THE CHAIRMAN: Will Senator Duncan N. Fletcher, the newly elected Senator from Florida, kindly step to the platform?

Senator Fletcher said:

I just this moment arrived in the hall. I have not had the privilege of hearing the addresses up to this time, and I scarcely know what particular subject you expect me to discuss. I appreciate the honor of this call. I appreciate the privilege of being able to attend this convention. I am in full accord with all its purposes and its plans, and desire to do whatever I am able to do to encourage the movement and further your undertakings. It is a little premature, Mr. Chairman, if you will allow me, to give me any title. I am not entitled to that distinction at present. In all probability it may come, but what I say today I am not saying as a Senator nor even as the prospective Senator. I am saying it simply as a citizen, as one particularly interested in the cause which you are all interested in, and I perhaps should be since this is a Southern Congress, more particularly with reference to the South. In doing so I do not wish to draw any distinctions or indulge in any invidious comparisons. I do so, because perhaps it is appropriate at this time—your name would signify that much—and because I am profoundly impressed with the movement which looks to the development of that section or portion of this country which has been so favored by Providence.

It is, I think, my friends, a wrong impression obtaining in various portions of our country, perhaps, and abroad, that the South is an unprogressive part of the country; that the people are more or less indolent and take life easy,

just as things come and go. I venture to call your attention to one or two facts, illustrating in my mind that this is a mistaken notion. In the first place, let me mention that the first public school established in this country was established in Virginia county, Virginia, Thomas Eaton having given it the milk and increase of eight cows as its endowment. I would call your attention to the fact that it was a Virginia farmer who invented the reaper which now harvests the grain in the vast western and central portions of our own country, and it is unique information that camels are today drawing that reaper at the foot of the Himalayas. The first boat propelled and operated by steam on American waters was invented by a native of Maryland on the Potomac River; and the first steamship that sailed across the Atlantic sailed from Savannah. The first locomotive built entirely in this country was bought by the State of South Carolina, and operated on a railroad in that State. One of the foremost undertakings looking to the industrial development of this country was fathered by Robert Y. Haney, of South Carolina, some fifty odd years ago, when he undertook to build and equip and operate a trunk line from Charleston to Cincinnati, and that undertaking, begun by him, has just recently been completed. It was a Georgia physician who invented the principle of anesthesia, and the world over humanity has been saved from great suffering. It was a Floridian, Dr. Corrie, of Apalachicola, who discovered the principle of artificial refrigeration, and the world today has ice in midsummer.

These are some of the things illustrative of some of the inventions, and some of those ideas which have found origin in that portion of our country. As has been said today, without going farther back, recent developments have exceeded the expectation of the world in that section. Not many years ago, my friends—I allude to it simply as a fact—when that portion of the country lay desolate and a crow had to carry his rations with him when he flew over it—

a very few years ago—and yet we find statistics giving us the total value of the property in the Southern States amounting today to over two hundred billions of dollars. The actual increase in the value of the property in that portion of the country is over three million dollars per day. That indicates something of what is going on. We are receiving people from all over the world to this country. We invite the man who is willing to join hands with us and help in developing that great section. These resources have scarcely been scratched on the surface. We want to advertise them to the world. We invite all people of good intentions, patriotic in their sentiments, and in sympathy of the institutions of our country, who are willing to enter into that spirit of development and progress which obtains in that section today.

I may be forgiven if I allude for the moment to my own particular State. I venture to say, my friends, that few people understand what we have in that fartherest end of the country. It has been said, I believe, that the anatomist has discovered that at the end of the spine is the center of the nervous system of the human body, and that in certain operations when that end has been mistakenly or inadvisedly clipped off, the patient has become a nervous wreck. Florida is the end of the anatomical system of this country—the center of the nerve system that reaches out through all the land, and you must take care of Florida if you would take care of your country. (Laughter and applause.) We have twelve hundred miles of sea coast unequalled by any State in the Union. We have an area that would easily accommodate five millions of people; we have only about 600,000. They are good people, too, but we need more of them and more of the same kind. We have thousands of miles of inland water courses; we have transportation facilities reaching out to the uttermost portions of the State and increasing all the while, but the great problem with us really today, as I view it, is the problem of transportation. We

have the resources, we have the products; we can increase the production, but we must find market for those products. We must be able to reach the markets with facility and at reduced rates, in order that these industries may increase and grow.

With all due deference to our neighbors in California, with all due deference to the foreign countries, where these things are produced, I venture to assert here today, without boasting, but as a cold proposition of fact, that no better, sweeter, finer oranges or grape fruit are produced on earth than are produced in Florida; that no better pineapples are grown in the world than are grown in Florida. These are some of the things that we have. Aside from that, in that section of the country—Florida especially—just at this time, being more largely concerned in that and having a greater and wider field in that particular matter than other portions of the country—the naval stores industry of the land. We are peculiarly adapted for that purpose, and for that great industry. The naval stores industry of that State yields annually an output of value which is from 14 to 15 million dollars; her lumber from 10 to 12 million dollars annually; her phosphates from 12 to 15 million dollars annually, and over all that State can be found more or less of that great deposit increasing in value—the phosphate from the surface of the rich top soil to the center of the earth so far as we know. That phosphate rock can be found in Florida, and it can be found nowhere else on the earth. Florida produces 6,000,000 pounds of tobacco annually, yielding something like six million dollars to her growers. She produces about one-half of the long staple cotton produced in this entire country; her cotton and her agricultural products yielding from six to eight million dollars annually; her fruit some six million dollars annually. She is the greatest fish producing State in the Union and the greatest sponge producing State in the Union; sponges are found on the western coast of Florida, the finest in the world, unequalled by

the Mediterranean or any other portion of the earth. These are cold facts. I call them to your attention. We wish you to come and investigate these matters.

Her commercial interests are increasing and growing daily. In ever increasing value come the grain and the provisions from the West through South Atlantic and Gulf ports; Jacksonville, Apalachicola, Pensacola, Tampa, and San Fernandina, and these and other ports are all day by day and from time to time being added to. Business and commerce is seeking those ports with ever increasing demand for outlet.

These are some of the matters that I would call to your attention as bearing upon the subjects that you are considering, and again I say we have a great country throughout all this Southland, the home of the cotton and of the yellow pine, and the only home practically in the world—cotton itself yielding $750,000,000 every year, and the cotton factories amount to $250,000,000 already erected in that land; and it is no longer a question whether the South can compete with New England in the manufacturing industry, that is, cotton goods; but the question is can New England compete with the South upon that matter?

We have, as I said before, a great people there; people who are looking ahead, who are going ahead, who are moving ahead, who are progressive people—people whose men are as brave and as self-reliant as ever stood in line of battle, and whose women are as pure and noble as ever conquered in the fairest struggles of peace. (Applause.)

A MEMBER: I understand we have with us one of Alabama's noble sons, one of her heroes, a man who would protect and keep the Pacific Ocean open, Captain Richmond P. Hobson. I move that we hear from him.

THE CHAIRMAN: Will Captain Hobson please step forward to the platform?

Mr. Hobson said:

Mr. Chairman, ladies and gentlemen: The hour is so advanced that I feel sure that on the point of adjournment I would not be meeting the desires of the membership to do more than say that I am here as a delegate from Alabama and I enter most heartily into the objects and possibilities for which this Congress is assembled; that I believe that there are possibilities in the South that we have only just begun to realize. In my own district I have been trying to start the appreciation of agricultural possibilities, and we have gotten far enough along to see that those possibilities are far beyond anything that we have yet realized; that in that district, for instance, we find that in many places we can produce three-quarters of a bale of cotton per acre where only a few years ago it was thought that the land was only good to hold the world together. I may add that we find that corn can be produced economically. We have added about ten per cent to the output and three or four thousand farmers to the number growing corn with the prospect that it will go up to fifty per cent and higher; and soon we can produce all the corn we need, and then produce the cotton in sufficient quantities.

The next step is going to be to consider the animal industry as well as the plant industry, and I believe that we are going to find that Nature has endowed that part of the South and that part of the world not only as the greatest cotton growing section and almost the only cotton growing section, but as the greatest spot for developing all forms of animal life, and that we will have the finest breeds of all animals that contribute to the food and happiness of man in all this country; we will find that we can grow hogs; we can raise the hogs and the cattle and the dairying cows and the horses and the mules and every form of animal product, as well as our agricultural products, and I am sure that this Congress will bring out the fact clearly that as a basis for developing these products—the basis for manufacturing the cotton and the ores, which, as we all know, are boundless

in their deposits, to the finished product; that with the matter of coal and the water as the power basis we have no equal. As for the matter of getting these products to the seaboard, there is no parallel; and, furthermore, that we are so located that we can reach almost with equal facility both of the great oceans, and therefore produce, as we are going to produce, the great world's staples. We can place them at tidewater at a minimum of cost, with the best transportation possibilities, and facilities ahead of them, so that, as far as I can see, from all standpoints, from that of the products, of the soil, and of the minerals beneath the soil, and the turning of these into value by human labor. Nay, have given us possibilities beyond any section of this whole world, and all that is needed now is for the people there, who are the purest of American blood—98 per cent Anglo-Saxon—to step forward and show that in this great department of agriculture, of manufacturing industry, that they can be just as great as their forefathers were in the Halls of Congress and in constitutional conventions. (Applause.)

I have only to conclude with this suggestion: That, producing as we do and as we will in ever increasing quantity and in proportion the fundamental staples for supplying human needs in this world, the staples of food, the staples of clothing and the staples of manufactured articles, and having the transportation facilities over the water soon to be available to all the world, that the South is interested in world affairs, in great world policies, and particularly in the perpetuation of peace of the world than any section of this country; and I believe, sir, that America is on the borderland of the great prosperity that we now see ahead—America is more interested in the great world policies and in the peace of the world, and that, therefore, any Congress like this ought to take account, before it gets through its deliberations, if not officially, at least privately, of the policies that the South ought to support, in helping to maintain

peace over the earth and the common transportation of the waters to all nations, so that as the next Congress will show we ought to develop the waterways—why develop them to the sea level if you cannot have waterways across the ocean? Why build your canals to the sea if you cannot go across that sea, and why have even the ocean opened to you if you cannot have a chance to enter the markets on the other side of those oceans? I submit it to you that the great questions of world policies and the world peace are a part of this Congress; and that this Congress ought to give its moral if not its official support to such policies. I thank you very much. (Applause.)

THIRD SESSION

8 P. M., DECEMBER 7TH.

Chairman JAMES E. SMITH,
President of St. Louis Business Men's League.

Missouri gladly joins with her sister States of the South in participating in this important convention which we hope will result in a strong, united, and successful movement for the industrial and commercial development of our Southern States.

Missouri occupies a unique position in our sisterhood of States. Our Western people often claim her as their own. Even the Northern States consider her at times as belonging to them but the average Missourian swells up to the fullest limits of his expansive capacity when he boasts of his State as belonging to the sunny South.

We are all proud of our several States no matter whether we live in Missouri, Georgia, Louisiana, or Texas, but we are all prouder still of the fact that we are American citizens.

St. Louis as the great commercial metropolis of Missouri has a deep interest in the growth and development of the South. Her merchants and manufacturers enjoy close business relations with your merchants and business men, and, owing to the fact that our population is made up, largely, of people from the different Southern States, we enjoy intimate social relations with you and we love your warm-hearted hospitable people.

We, therefore, stand for you and with you. Our sympathies are with you in all of your undertakings. We usually vote the Democratic ticket with you but, just to show our independence, and how big and broadminded we Missourians are, we occasionally vote against you and go Republican.

We are with you heart and soul in this proposed movement to bring together the commercial interests of the South in a strong, united effort to make known to the world your wonderful natural resources and to assist you to the fullest extent in their development.

No section of our country is richer in its natural resources than is the South, and these great sources of material wealth should and must be developed for the use and benefit of our whole people.

What you need is outside capital to open up your vast bodies of mineral wealth, to construct new railroads, to build great mills and factories that will convert your raw materials into finished products and give employment and good wages to millions of people who will come to you for such employment, thus adding to your wealth and population and enabling you to enjoy the fullest measure of happiness and prosperity.

To accomplish this desirable end we should all work together, and in my opinion the first and most important thing to be done is for the business men and other influential citizens to unite in stopping the senseless agitation against capital which for the past few years has been rampant in most of our Southern States. Great harm has been done and the blame for it rests upon the business interests in that they have made no particular effort to prevent it. In the game of politics we have allowed the other fellows to shuffle, cut and deal the cards, and it is now time for us to wake up and take a proper interest in the game.

It is high time for the business men of our whole country to get together and stand together in the protection of their rights and property.

This agitation has been directed against all forms of corporate wealth and especially against our railroads, our State legislatures yielding to the clamor of people who have been misled by political demagogues—people many of whom mean well but who have been led to think wrong—have made

laws which are doing incalculable injury to the very people who have clamored most loudly for their enactment.

Fortunately, many of them are already beginning to realize that a law that hurts the railroads hurts the working people —it hurts the laboring class and dimishes their purchasing power— it hurts the farmers in turn as it decreases the demand for their products—it reacts immediately upon the merchants and in the end hurts everybody.

Our own State of Missouri has made these same mistakes and we are now suffering from the consequences.

Our Missouri legislature at its last session passed a law compelling the railroads of our State to reduce their rate for carrying passengers to two cents per mile. Since that law was put into effect our railroads have all been losing money on their passenger business and what has been the result? A falling off in earnings—a less number of trains per day—a smaller expenditure upon maintenance—a smaller degree of safety for those who travel—in short, poor service. Our people are now beginning to see that what they really want is not cheap rates but good service.

This cutting down of the revenues of our railroads by legislative action threatens even greater harm in other directions. It is likely to affect the railroad wage problem. The last thing to be done, in my opinion, in business by American business men is to reduce wages. It is shown that of every dollar the railroads of the United States are earning today 42 cents is paid out to their employees and, as one business man, I am not willing to see that 42 cents reduced to any smaller sum, but just as the railroad employee is entitled to ample compensation for the labor he performs, the owners of the property—the holders of the securities—should be allowed a fair return upon *their* investments.

Our Southern States are not yet fully developed. Great areas are still unprovided with proper railroad facilities for the development of their resources. Thousands of miles of railroads must yet be constructed to provide for such devel-

opment, but who will supply the great amount of capital thus needed if the owners of railroad securities can not be assured that they will be safe in making such investments.

My friends, no sane capitalist will invest his money in such enterprises, until a just and honest policy is adopted which will guarantee full protection to the investors in all railroad securities and the business interests of our country must see to it that such policies are adopted and put into effect.

But when this question is raised, of the investor in our railroad securities being entitled to a fair return upon his investments, those who are antagonistic to our railroad interests in general, always raise their cry against what they term watered stock.

At the great Waterways Convention held in Chicago in October, Theodore P. Shonts, President of the Clover Leaf System, declared that railroads are entitled to a legitimate return on their investments.

Immediately a delegate asked, "Is it actual securities or watered stock you are talking about?" Without any hesitation, Mr. Shonts said: "I will answer you; I was just coming to that. Let me make it plain to your mind. There was a time when there was lots of watered stock, but the last ten years of successful railroad operation have resulted in so much money going from earnings into property that, on the whole, the best experts we have think we could not duplicate the properties for the amount of outstanding securities."

The statement of Mr. Shonts led me to write a letter to Vice-President Brown, of the New York Central System, in which I made inquiries on several points about which I felt the need of being further informed. On this question as to the relative costs and capitalization of our railroads, Mr. Brown said: "It is my opinion that, taking the railroads of the country as a whole, they have cost more than, and cannot be duplicated for, their present capitalization."

"The roads embraced in what is known as the New York

Central Lines, I know could not be duplicated for 150 per cent of their total capitalization.

President Roosevelt, a year of more ago, in a speech delivered at Indianapolis referred to this condition and gave some figure justifying him in the statement that while there might be certain cases wherein railroads were over-capitalized, as a general proposition the railways of this country were not over capitalized or bonded beyond their real value.

While I am not a railroad builder, from a general knowledge of the subject and from my faith in the integrity of our practical railroad men I am prepared to accept the statement of these gentlemen.

If we continue the unfair treatment that has been given to our railroads, we will stop the full development of our railroad systems. Stop railroad improvements and extensions, and at once we check the further progress and development of our country.

Reliable statistics show that the railroads of our country are the greatest consumers of our staple products.

It is shown that in 1907 their purchases of raw materials and manufactured products amounted to twelve hundred and fifty millions of dollars. It is shown that they purchased 35 per cent of all the manufactured products of iron and steel and 25 per cent of all the lumber cut and marketed in our country.

It is a known fact that the railroads of the United States employ almost one-tenth of our entire adult male population, and that there are nearly eight million people dependent upon their labor for their existence.

In view of these facts, is it not time for our people to stop this senseless and vindictive agitation against the railroads?

Can we afford to pursue a policy which, if continued, will destroy the most important industry of our country, and cause widespread injury to so many of our important trade interests, and bring disaster upon the millions who are dependent upon them for their support?

While it is true that in a few instances certain railroad

managers have followed methods which are open to condemnation, I believe that most of our railroads are being managed by able, upright and honorable men, I make no apology for any man who follows rascally or dishonest methods, but I insist upon it that it is unwise, unjust and un-American to charge all railroad officials with being dishonest, just because a few men holding similar positions have proved themselves unworthy, and it is manifestly unfair to visit the sins of these few offenders upon the thousands of railroad security holders—and worse still, upon the millions of wage-earners, who as matters now stand, are made to bear the burden of punishment.

Ample laws have been enacted which provide for the punishment for all such crimes and they should be enforced and proper punishment meted out to the real transgressors.

Fortunately, there are evident signs of a return to sanity on the part of our people.

We are beginning to realize that what we need is *constructive* and not *destructive* legislation—that it is better for us to preach the Gospel of good will and fair dealing among men than to encourage the doctrines of the vicious agitator, who instead of appealing to the best that is in us, attempts rather to arouse the most evil traits of character to be found in human nature.

He would have us look upon our neighbor with distrust—array class against class, and bring about conditions that would be unfortunate if not intolerable.

I believe that the world is constantly growing better.

I have great confidence in the judgment and uprightness of our American people, and believe that they will settle the important questions now before them in the right spirit and finally reach a safe and sane condition.

I may be charged with being optimistic—if so, I plead guilty to the charge.

I am an optimist, because I am an American citizen.

I am an optimist because I am by nature disposed to look for the silver lining which fringes every cloud, and I have a

firm and constant faith in the good sense and spirit of fairness which dominates all true Americans.

Further than this, I am an optimist because of the pessimists I have known.

You do not have to be reminded of the sharp antagonism that has prevailed of recent years between the public and the railroads. The latter were not wholly blameless for that spirit, but their faults did not justify the crusade of local legislation in many States against transportation interests.

For example, most of us here, probably all of us who in our business come into personal contact with railway men, officials, superintendents and clerks, know that at times we have been much vexed by inconsiderate, sometimes even uncivil treatment; and remembering that the railway is a business concern wanting patronage, we have wondered how this could be permitted by the managers when it is, of course, a cardinal rule with every well managed business house that everyone entering their doors shall be greeted politely, as if he were a friend making a visit.

A very large shipper from Arkansas said to me not long ago, smarting under the feeling that he had been received with rudeness in a railway office, "Why, I find it easier to get to the President of a railway than to obtain access to the office of a division superintendent, and sometimes I even find a station agent arbitrary and dictatorial when the president of that very road is pleasant and willing to enter into my business."

There is no doubt that this attitude of the smaller railway employees towards the public continuing through many years, has been one of the causes that led to the feeling of antagonism on the part of the public. Of course, the railways, employing thousands of men, are no more to blame for this than the mayor of a large city, in the public offices of which the public is treated uncivilly. The railway officials, I know, try very hard to teach their employees that the public must be received with consideration and politeness as in a

business house. The man who is treated uncivilly in a railway office does not let his grievance be known, as a rule, but goes away and nurses it until he gets an opportunity to show his resentment in some way that hurts the railway. I feel very sure that if the public would let the managing railway officials know whenever they are treated unjustly or impolitely in a railway office, the general tone of all the railway offices in the country would be sensibly higher, and that this incivility and rudeness would disappear very quickly.

But we seem to be entering upon a period of more harmonious relationship—of better understanding—of mutual appreciation between the people and the railroads. The tendency is now away from the harsh and unreasonable railroad lawmaking of the past few years. Business men in all lines—and I think the public generally—are better disposed toward the railroads than they were before the recent panic.

Under existing conditions it is plainly the duty of every man who loves his country and his fellowman to do his utmost to correct the evils that have been allowed to creep in and gain a foothold in our social and political life, and I sincerely hope that this gathering of earnest, loyal business men who are laying plans for the commercial growth and development of our New South, will sound the keynote for effective work along these lines and give expression to their convictions in no uncertain tone in the resolutions that will be adopted by this Convention.

Let us all work together for industrial peace.

Let us, my friends, encourage, as far as in us lies, the spirit of fair dealing to and for all men.

Let us realize that we, as citizens of a common country, are dependent each upon the other in all our relations in life and let us work together for the ultimate good of all.

Let us determine that instead of encouraging the arraying of class against class, that we will spread the Gospel of a universal brotherhood and teach the divine doctrine of "doing unto others as we would that they should do unto us."

THE CHAIRMAN: The subject for the first address of this evening is "Waterpowers of the South," a most important subject, and one that is now engaging the attention of our people to a greater extent than ever before in our history. The gentleman who will address you on this subject is a well-known civil engineer, and whose professional duties as a consulting engineer have included operations not only in many parts of our own country, but in foreign lands as well, and his experience enables him to speak authoritatively upon the subject assigned to him. It affords me great pleasure to introduce to you Mr. Frank S. Washburn, of Nashville, Tennessee. (Applause.)

(Mr. Frank S. Washburn spoke.)

THE CHAIRMAN: The subject next upon the programme is the "Commercial Significance of the Appalachian Forests," and the gentleman who will speak upon it I am sure is well known to all of you. He has been selected as the one most competent to speak. His work of the past few years, in the interest of the preservation of our forests, has commanded the respect and the admiration of every patriotic citizen of our country. It has been stated that a man who causes two blades of grass to grow where but one grew before is a benefactor of the human race, and so this gentleman in the splendid work which he has been doing is indeed a public benefactor.

I have the honor and the very great pleasure of introducing to you the Hon. Gifford Pinchot, Chief Forester of the United States.

(Mr. Gifford Pinchot spoke.)

THE CHAIRMAN: We have one other address, and it is upon the subject of the "Coal Resources of the South," a subject of special interest to the new South, and, in fact, a subject of great importance to the people of our entire country. The gentleman who will address you upon this

subject has a wide knowledge of the Appalachian and eastern coal fields, having done more detailed geological work in these fields than any other man living, and he is therefore better acquainted with them and more competent to speak of them than anyone we know of. I take great pleasure in introducing to you Prof. L. C. Glenn, Professor of Geology, of the Vanderbilt University, of Nashville, Tennessee.

(Professor L. C. Glenn spoke.)

FOURTH SESSION.

DECEMBER 8, 1908.

Chairman CHARLES HALL DAVIS, *President Chamber of Commerce, Petersburg, Va.*

Before the regular programme was set in motion the Chairman of the Committee of Arrangements spoke as follows:

The idea underlying the Congress has already begun to take shape in the minds of those who were not familiar with it except as a general proposition. The idea is to set the South right with itself, for we believe the greatest task ever laid upon a human being, or a state, or a section is to "know thyself." We have, therefore, gathered in this Congress the great facts of the South, so that the men of the South may know themselves. But, beyond all that, just as in the daily life that surrounds us, there is the necessity of being understood by others, the further purpose of this Congress is not only that the South may know itself, but that others shall know the South.

Each subject so far taken up is absolutely essential to a full knowledge of the South. Therefore, the feeling of

the Committee of Arrangements is most urgent that the southern men whom you may meet at times through the day should be here to learn to know their own land and therefore to love it.

Such a moment as we have come to in southern commercial development has never occurred before in our history, and this particular moment, it is hardly necessary to state, can never occur again in American history. This week the National Conservation Commission sits; it has never sat as a commission before. Its first session, it stands to reason, can never be repeated. This moment, when the thought of the country is turned towards the assets of the country as a whole, these southern men, with a wise provision, have gathered here, not to declare those assets so much as to interpret them. Such a psychological moment can never occur again in the history of the United States, and that psychological moment was seized by the southern states and by the southern states only. I congratulate every southern man who has dropped his business affairs to come here, for he has partaken in a movement that shall be historical." (Applause.)

Remarks by the Chairman:

As I have listened to the speeches of my predecessors as chairman of the various sessions of this Congress, and as I have appreciated more and more my own inability to measure up to the high standard they have established, I have been reminded of one of the few things that has remained to me out of four years study of Greek at college, and that is an old Greek proverb. Liberally translated, it is to this effect: That often when I have said much I have regretted it; when I have said nothing, never. (Applause.) And so this morning I intend to consume very little of your time with any preliminary talk. There have, however, occurred to me two thoughts in connection with this Con-

gress. One of them has been touched upon by Mr. Dawe in the remarks he has just concluded, and that is "know thyself." The purpose of this Congress—or the accomplishment of this Congress, it seems to me, up to this time, has been two-fold. We are learning of the resources of the South. It has been said that knowledge is power, and that it is equally true that a lack of knowledge is inexcusable, and, coming from eastern Virginia, I have been astonished as I sat here and listened to the discussions and addresses that were made and found out that in a statement of the resources of the South the resources on which my community depends almost entirely have barely been touched upon. The tobacco industry, the trunk manufacturing industry, the production of peanuts; all those things which in our particular section amount to a great deal when considered in connection with the possibilities of the South as a whole and when considered in connection with the resources of the South as a whole, have sunk into insignificance. And, in coming to this Congress, I have acquired a great deal of knowledge in that I have acquired a knowledge of the enormous quantity of resources and the various kinds of resources that are in the South, facts which had never before impressed me. In addition to that, as is stated in the beginning of this program, one of the objects of this meeting is to interpret in place of stating statistically. In other words, I have learned something not only statistically of the resources of the South, but I have learned something about the meaning of those resources. And, it seems to me, the purpose of this Congress—the purpose of this meeting—has been largely attained if we have learned what we have in the first place, and what is the meaning of what we have in the second place. The first thought suggested by the addresses that have been made is the thought that we should acquire this knowledge and should also learn what is the meaning of the knowledge so acquired. The second thought which I would suggest is this: A belief in the possibilities,

and the facts, and the conditions, and in the possibilities of the development of the resources which we have. There also occurs to me another recollection coming from the work which I had at college in my younger days, and that is this: that no man can accomplish anything unless he believes he can accomplish it. As my old professor of psychology used to say, a sane man will not try to jump over a house; a madman may try to jump over the house, the difference being that the madman believes he can and the sane man knows he cannot. So that, in listening to these addresses—in learning of the resources of the South—in learning the meaning of the resources of the South, it seems to me that the great purpose and the great object of this Congress will be attained if, in learning that, we have come to believe in the possibilities of the development of those resources and to believe that we can bring about that development by co-operative work. First, knowledge of what you have; then belief in what you can do with it; if those two purposes are accomplished by this Congress, then it seems to me that the objects accomplished are far in excess of the dreams of those who brought it about.

In looking over the program which we have partially gone through with, I have noticed, first, that is has dealt with the resources of the South in the most general way, and after dealing with the greatest generalities, it has come down more and more to particulars, and at this stage, as we say down in Virginia when we are getting down to particulars, we are "getting down to brass tacks," except as it happens, they are iron tacks. We are getting down to particulars. And I take great pleasure in introducing to you Mr. John H. Finney, who will read to you a paper prepared by Mr. Edwin C. Eckel, of Washington, D. C. Mr. Eckel is the iron expert of the Geological Survey. He is unable to be present, but the paper prepared by him will be read by Mr. Finney, who is the Secretary of the Appalachian Forest Reserve.

MR. FINNEY: It gives me a great deal of pleasure to read this, though I am very sorry Mr. Eckel cannot personally be here to do it.

(Paper by Mr. Edwin C. Eckel.)

THE CHAIRMAN: I have the pleasure of introducing to you a gentleman whose name is synonymous with the growth and prosperity of one of the most progressive communities in the South. Hon. D. A. Tompkins, of Charlotte, N. C., will addres you on "Cotton Monopoly and Cotton Manufacture." (Applause.)

(Paper by Mr. D. A. Tompkins.)

THE CHAIRMAN: I have to make an explanation and an apology for changing the order of the program. Not being aware that Dr. Hayes had reached the room, I took the liberty of calling on Mr. Tompkins ahead of him. I am sure, however, that Dr. Hayes' speech will be simply a pleasure deferred.

I now have the pleasure of introducing to you Dr. C. W. Hayes, the Chief Geologist of the United States Geological Survey, who will speak on the "General Mineral Wealth of the South." His peculiar fitness for making such an address can be explained by stating that during a period of from twelve to fourteen years he has been engaged in making geological surveys and maps of the Southern States and in investigating the mineral wealth of the South.

I take pleasure in introducing Dr. Hayes.

(Speech by Dr. C. W. Hayes.)

FIFTH SESSION.

1.30 O'Clock P. M., December 8, 1908.

Chairman, Judge Hillyer, of Atlanta.

Speech by Judge Hillyer:

I want you to indulge me by complying with the request that we gather a little closer together. We southern people are fond of associations and camp meetings, so let us follow the fashion and gather, as far as possible, on the middle front benches, so that in this large hall the speakers may be more at ease and you can hear better.

Now, just a word or two before beginning. One of the speakers last night—I think it was the Secretary of Commerce and Labor—mentioned the temperance reform in the South. That starts me on a reminiscent vein, and I can deal with that more rapidly and briefly than anything else.

Let us remember that it was in the South, and in the State of Georgia—within the colony of Georgia—that first in the development of human civilization the liquor traffic was controlled by law; first in that same colony, by any organized nation on earth, slavery was absolutely prohibited. In the city of Savannah, where both these events occurred, the first Sunday School ever seen on earth was held, conducted by John and Charles Wesley, nearly twenty years before Robert Raikes took up the same work and carried it forward in England. In the South occurred the first instance in human history where by law authority was given to confer a diploma upon educated women. Since that time—indulge me in saying what I so much believe in—all over the world in later days men have universally consented in the propriety of the abolition of slavery, female education, universal prevalence of Sunday schools, and the time will come when men throughout the world will also follow the South in temperance reform. (Applause.)

These are not the only things in which we of the South have been leaders. In the harbor of Savannah, when the struggle of the Revolution was in its infancy, a band of Georgia patriots captured an English ship, laden with powder, and they were wiser than those other patriots who threw the tea overboard and destroyed it in the waters of Boston harbor. They kept that powder, and General Washington used it, and it was an important factor in the siege of Boston when the patriots drove out the British.

Before that a battle occurred in what was then territorial Georgia, now within the state of Mississippi, but for nearly sixty years Georgia territory. A French army moved from Canada, down the Mississippi, to meet another French expedition from New Orleans, which was intended to go up the rivers of Alabama, and the object was to open up the navigation of that great stream, and to connect French power in the Canadas with French power at the mouth of the Mississippi. On southern soil—nay, on Georgia soil—with powder, and with bravery radiating from Savannah, that expedition was met, and the French Commander, Vincennes, was killed, and his army almost or quite destroyed, and all idea of permanent French domination of the Mississippi fully passed away, and from that time it was made easier for Wolfe to defeat Montcalm on the heights of Abraham at Quebec, and it was made easier for southern valor to defeat the British later still at New Orleans.

In later times, a steamship, named the Savannah, sailed from the port of Savannah and was the first steamship that ever crossed the Atlantic. It did cross the Atlantic and move along the Baltic, and convinced the world that ocean navigation by steam was possible.

And later still, when railroads were in their infancy and about to become universal, and the great line from New York to New Haven was opened for traffic and was to be permanently organized, without undue boasting I may

say that Connecticut and New England had to send to Georgia for the first president to run that railroad.

Now, someone said that there had been many emigrants from the South who had scattered over the Middle West and the West. May we not hope—nay, is it not our belief—that they carried with them southern ideas and southern reforms, and that wherever they go they may shower blessings in every community where their light may be cast?

And this brings me to mention what I cannot refrain from mentioning. I do not agree with some of the commentaries that fell last night from two of the speakers. I believe it is a mistake for us in this convention, or from this platform, to be one-sided in our views or to indulge in adjectives and expressions that are not sufficiently comprehensive. The true position is that, whilst our transportation companies are to be restrained and regulated, they must be regulated by laws that are wise and just, and by men who hold the scales of justice high and even and who can not be misled by persuasion or otherwise into anything that is wrong or unjust on one side or on the other. (Applause.) I claim to have a right to speak upon this subject, and I am sure if these gentlemen would inform themselves correctly—and I do not wish to lay undue emphasis upon or give undue prominence to this branch of our subject, but if either of these gentlemen had taken the pains to inform themselves thoroughly on the subject, they would have found that the situation is far different from what they suppose it is.

In the jurisdiction where my own knowledge is special and thorough, within the last year and a half, since inspections of the different railroads have been taken in hand by our Railroad Commission, whereas before it was often quite dangerous to travel upon any of the lines, nevertheless, by cautious, just, and careful inspections, it is a fact, contradiction of which I challenge, that in no solitary instance in a year and a half has a truck of a passenger train been

off the track by reason of a defect in the rails of the track. Not a limb has been broken, not a life has been lost by reason of that cause. Whereas two years ago—the figures have been often published and nowhere contradicted—within our jurisdiction approximately one hundred unsettled claims existed in the railroad offices. Without one word of harshness, without using an adjective of injustice, a better degree of diligence and service has reduced that number to less than thirty-five. And so far has the spirit of better service and better understanding between the companies and the public extended as that one or more of our principal lines have adopted the habit of having, not one of our inspectors, but one of their own, to visit the cities and towns and see the merchants and businessmen everywhere, and inquire into their wants, and their reports are tabulated showing the situation and the success with which these things are done.

Now, if gentlemen who differ with us on the subject here will, in a spirit which I know will cover the work of the railroad commissions in all the states of the South—if they will go into their offices and inform themslves about the facts, they will find that in the administration of this class of the duties of the Government, the authorities appointed by the different states neither can be intimidated or deterred by power or wealth, nor led in the slightest degree to follow any multitude to do evil. The true light is that of discriminating and careful justice in the administration of this class of public duty.

But I must not detain you, and I now proceed with the regular program. And first, we will hear the paper to be presented by Mr. Oliver, of Nashville.

(Speech by Mr. W. J. Oliver.)

THE CHAIRMAN: Mr. Dawe, the Chairman of the Committee of Arrangements, desires to make a statement or explanation at this point to the Congress.

MR. DAWE: In some stages of civilization, great things could be done by the exchange of lumps of copper or swapping of hides; in our day great things cannot be done by swapping hides or exchanging lumps of copper. The Committee of Arrangements, men of faith, believing that there was a thing to be done for the South that never had been done, that the right moment was this moment, that the right place was here, that the right subjects of discussion were the subjects in this program, began four months ago to make the South know what was to come and to make the world understand what the South had. We were men of faith. We have gathered here that which, perhaps, too many who might have been given the task, at the outset would have been thought impossible. We have had less than four months in which to approve every plan, in which to make the Southern Commercial Congress the most clearly defined Congress of this great week, in that it is a Congress that interprets the resources that we have. We have secured in that time the co-operation of the departments of the Government, so that in that room are charts of various kinds provided by different departments. Practically all of this, except one or two short trips, has been accomplished by correspondence. We have a correspondence school.

The point that the committee asks me to lay before you this afternoon—and it will take but a few minutes—is this: That we men, secretaries of live organizations—and live secretaries or we would not be secretaries of live organizations, have incurred for this immense effect that shall possibly direct toward the South millions of other money and investigation, and possibly will ultimately lead to the turning of millions of human beings to the South—we have accomplished this enormous work and set loose forces here that will never cease to operate, for twelve hundred and fifty dollars. (Applause.) That is the sum total of our obligation. The committee has instructed me on this subject of finance that it would be better to bring it straight before

the gentlemen in attendance upon the Congress and let them decide what should be done about it. We lay this matter before you—the men of faith that undertook this work that ought to have been undertaken, and who have carried it through to a remarkable success. (Applause.) These men have assumed a responsibility of twelve hundred and fifty dollars. It rests with you what we shall do to meet that responsibility. I would like to hear from you, gentlemen of the Congress.

(In less than 15 minues pledges and cash exceeded $1,700.)

THE CHAIRMAN: I want you to indulge me in just one word. I said something a little while ago about having captured a British powder ship. I do not know whether the gentleman I am going to mention was in the hall at the time or not, but he is here now, and if he will come forward, I want to present to the Congress the Honorable Mr. Bryce, the Ambassador of the British nation.

Mr. Bryce was greeted with cheers and prolonged applause.

MR. BRYCE: Mr. Chairman and gentlemen: This honor which you have shown me in asking me to mount your platform and in giving me such a cordial greeting is quite unexpected. I came in as a humble auditor, especially interested in the South and desiring to learn from the lips of the speakers the way in which the progress of the South was making itself manifest.

I will say only one word, and that is, it is a very great pleasure for me to be among you and to know that the active and energetic men of the South are met together here to consider what should be done. Twenty-seven years ago I visited the South. Since I came here eighteen months ago I have twice been down in the South, and I can hardly express to you the contrast which I perceive between the posi-

tion in which the South stood twenty-seven years ago and that in which it stands now. (Applause.) Wherever I have been in the South, I have been struck by the signs of activity, progress and development. I see the land being more and more brought under cultivation; I see more and more being done for the development of the best agricultural methods; I see the resources of your soil in coal and iron being brought to light and being made the basis of great industries, and I see manufactures springing up everywhere. And, not least of all, I see what a new spirit is in the South which desires to make educational progress commensurate with material development. (Applause.)

You gentlemen of the South have had enormous difficulties to contend with. It was only a few years ago that you were able to bring the South back to the point which it occupied at the outbreak of the Civil War. Now, however, there is a great door open before you, and I, as one who has always been one of the warmest well-wishers of the South, venture respectfully to congratulate you upon what has been done and upon the still wider prospects opening befor you. (Cheers and prolonged applause.)

At this point, the proceedings were suspended for a few minutes to permit the taking of a flash-light photograph.

THE CHAIRMAN: Now, gentlemen, we have still one or two interesting papers, and the time is ample for their presentation.

(Speech by Dr. Bonsteel.)

THE CHAIRMAN: We will now hear the concluding address of the afternoon on the subject of "The Agricultural Revolution," by Mr. Clarence H. Poe, who will now address you.

(Speech by Mr. Poe.)

SIXTH SESSION.

8 O'Clock P. M. December 8.

Chairman W. A. Bours, *President of Board of Trade, Jacksonville, Fla.*

The Chairman: I wish to say to the gentlemen present that I hope they will bear with me in my proceedings and rulings to-night, because I am a stranger among you, and if anyone gets up and wants to be recognized, I shall not always be able to call him by name.

As we have considerable business to transact I will be brief in my remarks.

I wish to thank the Committee of Arrangements of this Southern Commercial Congress for the compliment offered to Florida in selecting one of her delegation to preside over this magnificent and representative body tonight.

I feel my responsibility especially as this is the last session of this history-making Convention. At this session we will complete our work and present it in the form of permanent results for future consideration and guidance.

The subjects discussed by this Convention are varied in scope and colossal in their material values and relation to human energy and efforts. They can only be expressed in gigantic figures from a statistical and financial standpoint.

The Southland's wonderful resources in timber, coal, iron, water power, our possibilities of waterways, varied agricultural pursuits, minerals, etc., form a combination of material interests and opportunities for investment and development that are startling and should interest the business man and capital in every section of our nation.

What a tremendous community of interests is represented by the States comprising this Congress. Let us from this time forth work together with a unity of effort to increase, yes, multiply our business activities by interesting and invit-

ing in all good will and friendliness those who have not so good opportunities in their present fields of labor to come and dwell with us in the Southland and aid us and share with us in the benefits of developing the opportunities and advantages of this great section of the Nation.

I trust you will bear with me in making a few brief remarks about Florida, my native State. Florida is the unique State in the South, peculiar in a number of attractions that are exclusively her own. Much has been said of the importance of the Panama Canal by the Honorable Luke E. Wright, Secretary of War. If you will study the map you will notice that Florida is the central State between the two Americas far nearer to the Panama Canal than any other part of the United States, and that a direct vertical line of longitude passes through Jacksonville, Florida, and Colon, entrance to the Panama Canal.

I noticed in the two fine addresses made yesterday afternoon upon Southern ports that they were mentioned from Norfolk down southwardly along the Atlantic Coast to Brunswick, when the speakers made a jump from that port to Key West, Tampa and other ports on the Gulf of Mexico. A look at your map will show you that a little to the south of the State line between Georgia and Florida there is a magnificent river flowing northwardly which is unique among the rivers of the country for this reason. This river is the great St. John's, which is navigable for vessels drawing twenty-four feet from the jetties built by the National Government to Jacksonville, a city of 60,000 population, located about twenty-seven miles from the mouth of the River. This river is also navigable beyond Jacksonville for a distance of about 200 miles to Sanford, capable of handling vessels of lighter draft, and even beyond that point it is navigable for a distance of eighty miles further for smaller craft to a point near Rock Ledge on the east coast. This magnificent river and harbor about twenty years ago had a channel of only about eleven feet in depth, but our energetic

Board of Trade became interested and started the work of progress for a deep channel to the sea by raising a subscription to pay for the services of Captain Eads, the eminent civil engineer of Mississippi River fame, to come and make a survey looking to its improvement. The result of his visit was such that appropriations from time to time have been secured from the National Government which now amount to upwards of $4,000,000, resulting in the attainment today of a channel twenty-four feet in depth from the city to the sea. To show you, gentlemen, the advantages obtained by these improvements it is only necessary for me to say that the commerce of the Port of Jacksonville before these improvements were started was hardly $1,000,000 per annum. The statistics for the year 1907 show a wonderful development, and that the value of the commerce of the Port of Jacksonville for that year amounted to over $60,000,000. I mention this to emphasize the fact that liberal appropriations come back many times to the Government from investment in rivers and harbors water improvements.

Much has been said in this Congress of our inland waterway systems. Florida is the pivot, the central point in our *great national system of waterways* which has been evolved starting from New York down the Atlantic Coast and entering the St. John's River. From thence a ship canal will be built across the Florida Peninsula to the Gulf. The Mississippi to Atlantic Waterways Association is aiding us in this work and we are aiding them in their plan for an inland waterways from the Florida West Coast to the Mississippi River; thence up that grand stream through the Lakes to the Gulf Canal to Chicago, and on through the Lakes through the Erie Canal and Hudson River out to the great Atlantic at New York.

At no point in this great project is there so much saving of time and money to be made as there will be by the building of the Florida Ship Canal. More than 1,000 miles of

sea-going travel and the dangers of going through the Straits of Florida will be saved.

Florida with its oranges and grape-fruit, pineapples and vegetables may be termed the veritable winter-garden of the entire country. These wonderful products of the soil, which are in such great demand throughout the eastern, northern and western markets in winter, are raised in great abundance at the time of year before any other State is able to place them in the market. Nor are we lacking in heavy material interests. While old New England cities on the rock-ribbed coasts of the Atlantic excel us in manufacturing, and though we have not the wealth of gold and silver and copper that underlie the Rocky Mountains and the Sierra Nevadas of the West, we have phosphate beds as inexhaustible as the gold fields, which Professor Glenn spoke of in last night's address, as a product so necessary in the agricultural pursuits. Then we still have left millions and millions of acres of pine forests which not only yield yellow pine lumber for the upbuilding of the country, but which also yields its golden gum to be manufactured into those two world necessities, spirits of turpentine and rosin, the value of which adds many millions to the wealth of our State annually.

Our Sea Island Cotton is almost a monopoly which goes to make the spool thread, the fine cambric handkerchiefs, and the laces which are so valued by the fair sex. One bale of Florida Sea Island cotton when made up into spool thread realizes the manufacturers upwards of $2,500. Florida's crop of Sea Island cotton this season will be close on to 100,000 bales. We have the largest sea-coast of any State and the largest fisheries in the United States.

Our climate is without a rival anywhere on this continent, and its health-giving, balmy breezes assure pleasure and comfort both during summer as well as winter, and give us a permanent annual inflow of at least 250,000 winter tourists every year; so while each of the States represented in this Congress have their own special features, still Florida

is not behind any of them. It is only necessary with all of us to call attention to our resources and to make them properly known to fill the Southland with new and permanent citizenship, energy and wealth and to grow in social and commercial importance.

THE CHAIRMAN: The next number on the program is the address on Present and Prospective Educational Progress. We have with us a gentleman who is well known in the educational world, the head of one of the greatest universities in our Southland. He is a man of high ideals, and I am sure he will interest you. I take pleasure in introducing Dr. Alderman.

(Speech by Dr. Alderman.)

A MEMBER: Mr. Chairman, as a delegate from Georgia, I make no invidious comparisons when I say that the speech we have just listened to is the grandest speech of them all. (Applause.) If there had been no good reason otherwise for calling this Southern Commercial Congress together, it was justified by the speech we have just heard. I move, Mr. Chairman, that we thank the speaker by our rising vote.

A MEMBER: Second the motion.

The audience rose.

THE CHAIRMAN: I did not think it was necessary to put that motion.

(Here report of the Committee on Organization was made.)

THE CHAIRMAN: I ask the Congress to hear Mr. Jno. H. Finney of Appalachian National Forest Association.

MR. FINNEY: As Secretary of the Appalachian National Forest Association, I have asked for five minutes in which to tell you something about the Appalachian National Forest. Those of you who heard the inspiring talks this afternoon at the Belasco Theater must realize, I believe, that the thing we have been working for, the establishment of the

Appalachian National Forest, means a great deal to the South and the Nation. The situation is just this. We have been working for some twenty years for the establishment of the Appalachian National Forest. Some years ago we thought we were almost on the point of making it. We are just as far from it today, apparently, as we were then. The Appalachian National Forest project proposes to establish in the southern Appalachian mountains a national forest of five million acres along the important water sheds of our Southern streams. Without that forest protection, I believe I am safe in saying that our water powers, our navigable streams are seriously menaced. We have in all these years piled testimony upon testimony as to the importance of this legislation. At the last session of Congress particularly we presented the matter in a way that we thought would convince any man who wanted to be convinced. The Senate passed the bill, the bill providing for five million acres in the Southern Appalachians and six hundred thousand in North Carolina. The House Committee on Agriculture, after considering the matter all session, did nothing. It is before the Committee today for consideration and tomorrow at a public hearing, the Senate bill which passed the Senate last year. I feel so strongly about this that I believe in no higher way could this Southern Commercial Congress express itself than by going up to that House Committee on Agriculture tomorrow at half past ten and demanding action on this measure. The time has come when we are tired of asking for these things that we know we need. The time has come to demand them as our absolute right. (Applause.)

THE CHAIRMAN: The Chair earnestly requests that the hall be quiet while the speaker is addressing you.

MR. FINNEY: I believe that if the real brains of the South—the commercial men of the South, who are building the South, and who certainly must realize that we must have the Appalachian Forest if we are to keep the South a

fair land and prevent its becoming a desert, will go to the House Committee on Agriculture tomorrow morning, we will show the Agriculture Committee that we mean business. And I think that in no higher way could you serve the South and yourself than by going up there and throwing your influence in favor of this legislation. To those of you who care to go, I will be very glad to talk after this meeting is over.

A MEMBER: Mr. Chairman, I would suggest that the newly elected president be invited to make his initial bow.

THE CHAIRMAN: Is Mr. Parker present?

Mr. Parker came forward and was greeted by applause.

MR. PARKER: Mr. Chairman, ladies and fellow members of the Southern Commercial Congress: I fully appreciate the honor conferred upon me tonight, and to the fullest extent of my ability I am going to try to prove myself worthy of it. *We have lots of work on hand, and we should get right at it.*

A MEMBER: Mr. Chairman, the Committee to which resolutions were referred is ready to make its report.

THE CHAIRMAN: Are you ready for the report of the Committee on Resolutions? (After a pause.) We will be pleased to hear from the Resolutions Committee, Governor.

GOVERNOR SMITH: Mr. Chairman, ladies and gentlemen: We first desire to submit a resolution which is separate from the general report of the Committee:

WHEREAS, the conception of the idea which has resulted in the formation of this Southern Commercial Congress is due to the brains of one man, and

WHEREAS, to his indomitable energy and ability is due the practical execution of those far sighted plans, and

WHEREAS, through this organization a grand and noble

work is begun fraught with much commercial and industrial benefit to the South, and to the entire country, therefore be it

Resolved, That the Southern Commercial Congress, in convention assembled, does hereby unanimously express its sincere gratitude to its originator and guiding spirit, G. Grosvenor Dawe, of the city of Montgomery, Alabama. (Applause.)

THE CHAIRMAN: I declare the resolution already carried by a rising vote.

GOVERNOR SMITH (continuing): And be it further

Resolved, That the thanks and congratulations of the Congress be extended to those friends and well wishers who by their epoch making addresses have made this convention one of the most important ever held in the interest of the South, and also to those members of the Committee of Arrangements whose work has been so wisely and efficiently performed that the entire program and proceedings have been carried out with a smoothness and accuracy that has aroused the admiration of all.

THE CHAIRMAN: Gentlemen, you have heard the resolution and the beautiful tribute to Mr. Dawe. It is moved and seconded that a rising vote be taken to show the appreciation of Mr. Dawe's work. (After a pause.) Mr. Dawe has been unanimously thanked.

GOVERNOR SMITH: Mr. Chairman and gentlemen: Various resolutions were referred to the Committee, and finally a sub-committee was appointed which has prepared a report in the shape of an address embodying the statements of facts and the suggestions of policies which might otherwise have been contained in resolutions. I will now read the action of the Committee.

(Here the statement was read.)

On behalf of the Committee, I move the adoption of the report.

A MEMBER: Second the motion.

THE CHAIRMAN: It is moved and seconded that the report be adopted. Those in favor signify by saying aye. (After a pause.) Those opposed, no. The resolutions are unanimously adopted.

MR. CARMICHAEL (of West Virginia): I make a motion, in view of the short address which was made in regard to the Appalachian Reserve, that the officers of this organization be a special committee to wait upon the House of Representatives tomorrow at the proper time and place, to urge upon them the importance of the passage of that bill. Tomorrow is the time to act. We are here for action, not altogether for resolutions. Action must accompany resolutions, and this is your opportunity, tomorrow, to press home upon the House of Representatives of this nation the point which has been brought before you and which has been enlarged upon, and I hope that this Convention will take action upon this matter.

A MEMBER: I would like to make a motion that Mr. Ruge, or some other delegate who may be selected, head a delegation to bring before Congress a definite policy in regard to the Appalachian claim which was endorsed by the resolutions.

THE CHAIRMAN: It is moved and seconded that Mr. Ruge head a delegation to bring before Congress a definite policy in regard to the Appalachian claim, which was unanimously endorsed by the resolutions. Those in favor signify by saying aye; (after a pause), those opposed, no. I declare it unanimously carried.

A MEMBER: We were all very much pleased this afternoon, in the theater, to hear the address of our President—and I believe it was seconded by the President-elect—to offer an issue of bonds for the development and improvement of our waterways, because of the insufficiency, or at

least because our revenues, our money revenues, are inadequate to meet the demands that are made upon Congress. Therefore, I would like to see this Congress pass a resolution urging their Senators and Representatives in Congress to urge the passage of both bills that are now before the House and also in the Senate, with the idea of passing five hundred million dollars worth of bonds for the improvement of our rivers and harbors within the next ten years.

THE CHAIRMAN: The Chair regrets the necessity of declaring that out of order.

REPRESENTATIVE AUSTIN (of Tennessee): I wish to move a vote of thanks to the members of the public press for the very valuable reports that they have made of the meetings in this hall.

THE CHAIRMAN: It is moved and seconded that the Congress thank the members of the public press for the reports they have made of the meetings in this hall. Those in favor signify by saying aye; (after a pause) contrary, no. The motion is carried. Is there any further business?

A MEMBER: I move the regular order, Mr. Chairman; the summing up by Mr. Dawe.

THE CHAIRMAN: It gives me great pleasure to introduce to you, ladies and gentlemen, the man who is absolutely responsible for this organization from its incipiency, Mr. G. Grosvenor Dawe. (Applause.)

MR. DAWE: I think, ladies and gentlemen, I would prefer to be supported on this platform by the men who have helped essentially in this work, and I ask the Committee of Arrangements to come up on the platform, if you please.

(Introducing the members of the Committee) Mr. Edwin L. Quarles, of Petersburg, Virginia. Young, but absolutely dependable. (Laughter and applause.)

John A. Betjeman, of Albany, Georgia. (Applause.)

Mr. E. S. Shannon, Secretary of the Board of Trade of Nashville, Tenn., said to be the greatest commercial organi-

zation in the South—at least, he says it is. (Laughter and applause.)

Mr. M. B. Trezevant, of New Orleans, Louisiana, who is an essential element in the Progressive Union of that city. (Applause.)

Mr. H. H. Richardson, of Jacksonville, Florida, ladies and gentlemen, who came up here thoroughly prepared to do whatever he could, and he has done it from start to finish. (Applause.)

Mr. Finney, of Washington, of the Appalachian National Forest Association, without whom it would have been absolutely impossible to have perfected the arrangements that have so smoothly gone forward here in Washington. (Applause.)

Mr. W. G. Cooper, of Atlanta, Georgia, who has made Atlanta known everywhere. He is at it every day, Sunday and every day. (Applause.)

Mr. James E. Smith, President of the Business Men's League of St. Louis, Missouri. (Applause.)

(Speech by Mr. Dawe.)

M. B. Trezevant (of New Orleans): Just one thing, Mr. Chairman, which is essentially appropriate, now that we have the institution of Commercial Secretaries so largely represented with us. The fertile brain of my friend Shannon has originated a scheme which is to be put through. He has suggested that the Southern Commercial Secretaries Association, or the members of it—as many of them as can go—make an exploration through the Isthmus of Panama to find out what the South may expect when that great interoceanic canal shall have been put through. I am here to offer you the service of a steamship line that has been put under contract at the instance and demand of the Canal Commission. Two years ago or more originated the idea of organizing a committee to interview the Canal Commis-

sion. The Commission granted every request that we made upon them except one. They would not give us government ships out of the Gulf Coast ports. We fought for the Gulf Coast; not for New Orleans, not for any one city, but for the entire Gulf Coast. They told us, if you will put in refrigerator ships we will ship practically the entirety of our meats and perishables by your route. We told them we would do it, and in fourteen months' time three of the most magnificent ships that sailed out of the ports of the Gulf were plying between New Orleans and Colon.

We ask you, the Commercial Secretaries of the South, to go there next April, prior to your own Atlanta convention, taking ship, to be chartered there, going to Panama and to the Central American republics, and return able to report to your own convention and this body here the result of your investigations. (Applause.)

MR. COOPER: I want to say a few words about Atlanta. You may not have heard as much about Atlanta as you ought to have heard. Our great fault down there is that we are too modest, but we desire very much that you come down there and see what we have. We have in Atlanta what we call the Atlanta spirit. I hear that the grosser forms of that spirit have been found in Chattanooga, and Jacksonville, and some other cities. We will give you the high refinement of that spirit. Now we have a saying in Atlanta that Atlanta is like champagne, you need no other stimulant. It never grows hot in Atlanta. It is so cool in the morning you think it is like mountain dew, and by evening it is so good you do not know what it is like. We want you to come to Atlanta. I understand from Mr. Trezevant of New Orleans that this excursion to the Panama Canal Zone will be so arranged that all who go to the Atlanta meeting can take the other trip to New Orleans and from there to the Canal Zone. We hope that all the secretaries will come and bring their friends with them, and bring the

presidents, the directors, and as many of the members of their boards of trade and chambers of commerce as they can.

A MEMBER: I want to say that we are proud of Atlanta, but we must not allow this opportunity to pass without calling to your attention the fact that the President-elect of the United States has adopted Augusta as the garden spot of that State.

THE CHAIRMAN: I expect it is a little out of order, but inasmuch as we have Mr. Royster, the President of the Southern Commercial Secretaries, here, I want Mr. Royster to call a meeting of the Southern Secretaries who are attending this convention, to meet in a parlor of the hotel during the week. Mr. Royster is here, and if he will announce the hour, we will meet him.

Mr. ROYSTER: I take it, Mr. President, that this is a very good opportunity to call an impromptu meeting of the Southern Commercial Secretaries Association, after nine-thirty tomorrow morning. I should like for the secretaries to report.

We have finally decided that the secretaries will meet at one o'clock tomorrow afternoon in the red room downstairs.

THE CHAIRMAN: Before we adjourn, I hope we will all return to our homes sufficiently inspired by the meeting tonight. The meeting now stands adjourned sine die.

SECTION X-A.—NOMINATIONS.

REPORT OF COMMITTEE ON PERMANENT ORGANIZATION.

To the Officers and Members of the Southern Commercial Congress: Your Committee on Permanent Organization is composed of the following gentlemen:

Alabama:
J. S. Pinskerd, Montgomery,
T. E. Kilby, Anniston.

Arkansas:
I. M. Worthington.

Florida:
J. G. Ruge, Appalachicola,
F. M. Hendry, Tampa.

Georgia:
T. G. Philpot, Augusta,
L. H. Chappell Columbus.

Kentucky:
Geo. H. Cox,
R. R. Perry.

Louisiana:
D. H. Sholars, Leesville,
M. B. Trezevant, New Orleans.

North Carolina:
W. A. Adams,
A. E. Tate.

Tennessee:
Henry K. Winslow, Harriman,
D. W. Stewart, Chattanooga.

Texas:
Roy Miller, Corpus Christi,
C. C. Odin, Houston.

Virginia:
W. B. Livezey, Newport News,
E. B. Jacobs, Roanoke.

Missouri:
Charles P. Center,
C. H. Howard.

Met yesterday afternoon, elected J. G. Ruge, of Appalachicola, Florida, Chairman, and George H. Cox, of Owensboro, Ky., Secretary.

The question of permanent organization was then discussed. It was the unanimous expression that this Southern Commercial Congress was the greatest movement ever inaugurated from within the South for the exploitation of the varied and wonderful resources of our Southland, and that such a movement should be perpetuated through a permanent organization.

To this end the following sub-committees were appointed:

Committee on Constitution:
L. H. Chappell, Columbus, Ga.
R. R. Perry, Winchester, Ky.
W. B. Livezey, Newport News, Va.
J. R. Hume, Nashville, Tenn.

Committee on Finance:
Charles P. Center, St. Louis, Mo.
D. W. Stewart, Chattanooga, Tenn.
Roy Miller, Corpus Christi, Texas.
C. C. Odin, Houston, Texas.

Committee on Nominations:
I. N. Worthington, Arkansas.
A. E. Tate, North Carolina.
H. K. Winslow, Harriman, Tenn
T. G. Philpot, Augusta, Ga.

These committees were requested to report on these various matters at an adjourned meeting of the Committee on Organization.

The Committee was convened again today to hear the reports of the foregoing committees, and after the adoption of the reports of these committees, it was moved and unanimously carried that the action of the Committee on Organization, together with the reports of the sub-committees be presented to the Southern Commerical Congress and recommend their adoption.

The Committee on Nominations report as follows:

President, John M. Parker, of New Orleans.

First Vice-President, John G. Ruge, Appalachicola, Florida.

Managing Director, G. Grosvenor Dawe, Montgomery, Alabama.

Secretary, Edwin L. Quarles, Petersburg, Va.

Treasurer, John A. Betjeman, Albany, Ga.

Vice-Presidents:

Alabama, F. P. Glass, Montgomery.
Arkansas, C. R. Breckinridge, Fort Smith.
Florida, John G. Christopher, Jacksonville.
Georgia, T. S. Raworth, Augusta.
Kentucky, J. B. Atkinson, Earlington.
Louisiana, Philip Werlein, New Orleans.
Mississippi, Charles Scott, Rosedale.
North Carolina, A. E. Tate, High Point.
Oklahoma, Vacant.
South Carolina, Louis W. Parker, Greenville,
Tennessee, John W. Faxon, Chattanooga.
Texas, M. Lasker, Galveston.
Virginia, Wm. T. Anderson, Norfolk.
West Virginia, A. K. Thorn, Clarksburg.
Missouri, George W. Simmons, St. Louis.

Respectfully submitted on behalf of the committees, and move the adoption of same.

JOHN G. RUGE, *Chairman*.

SECTION X-B.—RESOLUTIONS.

RESOLUTIONS ADOPTED.

The report, presented by Gov. Hoke Smith, of Georgia, Chairman of the Committee on Resolutions of the Southern Commercial Congress, was in the form of a declaration. The report was adopted in the following words:

The Southern Commercial Congress, in convention assembled with accredited representation of sixty-four commercial organizations from fiftee n States, invites the attention of the citizens of our immediate section and of the entire country to the present and prospective agricultural, industrial and commercial status of the Southern States and to their possibilities and their needs.

RESOURCES AND OPPORTUNITIES.

The South is the most inviting section on this continent for the employment of brains, energy and money, because of its unequaled resources. It points to the following incontrovertible facts:

The South has the greatest variety of the richest soils, which, aided by an abundant waterfall and the most favorable climate, offers the most attractive field for agriculture and horticulture of every type. Two and three crops of many food supplies can be grown annually on the same land, and conditions for the economical raising of live stock are unequaled.

It has virtually a monopoly of the world's production of cotton—the chief material for clothing. This crop today brings the largest money income on our list of national exports.

Its crop of tobacco of the highest grades, as well as of ordinary varieties, is rapidly increasing.

It has a monopoly in the United States, in the production of six most important minerals—phosphate rock for the manufacture of fertilizers; sulphur for innumerable purposes; bauxite for the manufacture of aluminum, of manganese, of asbestos, and monozite—of increasing importance in many arts.

The South's great quarries of granite, marble, and building stones and its deposits of cement and kaolin are inexhaustible.

It has almost a monopoly of the hardwood forests left standing.

It furnishes 40 per cent of the country's petroleum, fluorite, pyrites, barytes, mica, and talcum soapstones.

Its unequaled deposits of iron are so great that notwithstanding the present large production, in another generation our country must largely rely upon this section for that backbone of commerce.

It contains the most important and permanent groups of water powers in the whole country.

These materials and advantages, in connection with the salubrious climate, affording opportunity for open-air work eleven months in the year, offer abundant reward for the most active use of brains, capital, energy and trained hands. "Go South" is today the wise slogan for every man of capacity, resource and skill.

RAILROAD EXTENSION NEEDED.

Railroad construction has been extensive, but the rapid commerical growth of the South requires an enormous increase in its railroad facilities to transport to market its

many and varied products. The construction of such adequate facilities can be accomplished only by assuring the holders of capital that such enterprises will be safeguarded by conservative and constructive legislation, and we urge upon our Southern legislators the wisdom of such policy, and condemn any agitation leading to the contrary.

We favor a spirit of co-operation between the people and the railroads, and other corporate interests to the end that the required confidence of investors may be established in the securities of the corporations of the South.

GOOD ROADS REQUIRED.

In all the Southern States attention is more than ever directed to the improvement of the public roads. We have many highways which will compare favorably with any in the world, and these will serve as object lessons for the improvement of others.

Road congresses and other means of arousing the people to action should meet with every encouragement, for good roads will save enormous waste of effort, stimulate agriculture, facilitate education, and promote friendly intercourse between the town and country.

APPROVE DEEP WATERWAYS.

We recognize the importance of waterways as a means of transportation, and we desire to express our appreciation of the efforts already made and results accomplished by the various waterways associations.

We urge upon Congress immediate action for the practical development and improvement of our inland waterways and harbors upon a broad and comprehensive plan.

APPALACHIAN FOREST RESERVE.

We deem the establishment of the proposed Appalachian and White Mountain national forest reserve of paramount importance to the nation.

We deplore delay and urge upon the House of Representatives immediate favorable action.

PROGRESS OF EDUCATION.

We commend the great attention now being given to education and we favor the further extention of industrial training in the public schools to the end that each man may be a master in whatever occupation he may pursue.

We believe it wise to press the introduction of manual training in public schools, and the establishment generally of industrial and agricultural schools.

CONSERVATION OF RESOURCES.

We urge organization not alone to promote the study and development but for the conservation of our natural resources. We owe this obligation to posterity, and to the nation as a whole, as well as to our sections.

WANT EFFECTIVE SANITATION.

In order that our people may have the full benefit of our salubrious climate we urge upon them, especially those in cities, the importance of thorough and effective sanitary measures. For this and other ends of good government we advise the systematic study of public affairs by commercial bodies as well as by individual citizens.

The movement for civic improvements has already made much headway in Southern cities, and promises incalculable benefits to urban life. The interest of the busy citizen in civic affairs is a duty and by it good government has been and will be greatly advanced.

WOULD EXTEND MERCHANT MARINES.

The present insignificant proportion of our merchant marine is unworthy of this great nation. The success of the industrial development of the entire country as well as the South depends upon our ability to reach promptly and efficiently the markets of the world with our exportable surplus. To accomplish this we must have a merchant fleet commensurate with our trade.

We urge the early adoption of such plans as will bring about this result, particularly with reference to a comprehensive revision of the regulations and laws governing our merchant marine.

LOOK TO PANAMA CANAL.

In the light of the early completion of the Panama Canal and the consequent rapid development of a vast Central America, South American, and Pacific trade, the South realizes its tremendous responsibility in preparing for the fullest use of the consequent national opportunity.

To this end it urges the remainder of the country to the most active and immediate co-operation with the South in the adequate development of Southern waterways and harbors, which are as necessary to the other parts of the country for the exports of their products as to the South itself.

Committee on Resolutions:
Gov. Hoke Smith, *Chairman.*

Alabama:
F. P. Glass.

Arkansas:
I. M. Worthington.

Florida:
D. G. Ambler,
D. U. Flether, Jacksonville.

Georgia:
Gov. Hoke Smith, Atlanta,
W. B. Stillwell, Savannah.

Kentucky:
John B. Castleman,
C. D. Gates.

Louisiana:
C. N. Ellis,
W. H. Hendren, New Orleans

Tennessee:
W. J. Oliver, Knoxville,
Leland Humes, Nashville.

Texas:
H. H. Hanes, Galveston,
R. B. Baer, Richmond.

Mssouri:
George W. Simmons,
John E. Pilcher, St. Louis.

Virginia:
Joseph A. Hall, Norfolk,
W. T. Dabney, Richmond.

SECTION VI.

FOREST AREA, TIMBER RESOURCES AND LUMBER CUT OF THE SOUTH.

GIFFORD PINCHOT,
Chief Forester.

Addressed the Congress upon the Commercial Importance of the Forests of the Southern Appalachian Mountains.

Not having reduced his statements to writing he gave instructions to his bureau to furnish information from which has been compiled the following fact in regard to the forest area, timber resources and lumber cut in the South. A glance at the following tables and diagrams will indicate the relative importance of the Southern States to the lumber industry of the country. An analysis of the total of forest areas shows that in the sixteen Southern States there are 257,700,000 acres of forest or almost one-half the total forest area of the United States. The figures given by the Bureau of the Census for 1907 prove that these sixteen Southern States yielded somewhat more than one-half the lumber production of the entire country. The diagram showing lumber cut indicates the long lead held by yellow pine and other species.

*Forest Area of the United States by States and Territories, 1908.**

State.	Land Area. Acres.	Forest Area. Acres.	Forest Area. Percentage of Land Area.
Alabama	32,818,560	20,000,000	61
Arizona	72,857,600	14,000,000	19
Arkansas	33,616,000	24,200,000	72
California	99,898,880	24,000,000	24
Colorado	66,341,120	12,000,000	18
Connecticut	3,084,800	1,600,000	52
Delaware	1,257,600	350,000	28
Florida	35,111,040	20,000,000	57
Georgia	37,584,000	22,300,000	59
Idaho	53,618,560	20,000,000	37
Illinois	35,841,280	2,500,000	7
Indiana	22,966,400	4,000,000	17
Iowa	35,575,040	2,500,000	7
Kansas	52,335,360	1,000,000	2
Kentucky	27,715,840	10,000,000	39
Louisiana	29,061,760	16,500,000	57
Maine	19,132,800	14,900,000	78
Maryland	6,362,240	2,200,000	35
Massachusetts	5,144,960	2,000,000	39
Michigan	36,787,200	15,500,000	42
Minnesota	51,749,120	15,500,000	30
Mississippi	29,671,680	17,500,000	59
Missouri	43,985,280	18,300,000	42
Montana	93,296,640	18,000,000	19
Nebraska	49,157,120	800,000	2
Nevada	70,285,440	5,000,000	7
New Hampshire	5,779,840	3,500,000	61
New Jersey	4,808,960	2,000,000	42
New Mexico	78,401,920	12,000,000	15
New York	30,498,560	12,000,000	39
North Carolina	31,193,600	19,600,000	63
North Dakota	44,917,120	600,000	1
Ohio	26,073,600	4,800,000	18
Oklahoma	44,424,960	8,000,000	18
Oregon	61,188,480	27,000,000	44
Pennsylvania	28,692,480	9,200,000	32
Rhode Island	682,880	250,000	37

State.	Land Area. Acres.	Forest Area. Acres.	Forest Area. Percentage of Land Area.
South Carolina	19,516,800	12,000,000	61
South Dakota	49,195,520	1,200,000	2
Tennessee	26,679,680	15,000,000	56
Texas	167,934,720	30,000,000	18
Utah	52,597,760	6,000,000	11
Vermont	5,839,360	2,500,000	43
Virginia	25,767,680	14,000,000	54
Washington	42,775,040	25,000,000	58
West Virginia	15,374,080	9,100,000	59
Wisconsin	35,363,840	16,000,000	45
Wyoming	62,460,160	10,000,000	16
Total	1,903,423,360	544,400,000	29

*Estimate by National Conservation Commission.

—Lumber production—number of mills, quantity, per cent of increase, and per cent distribution of total cut, by states arranged according to rank in 1907: 1907 and 1906.

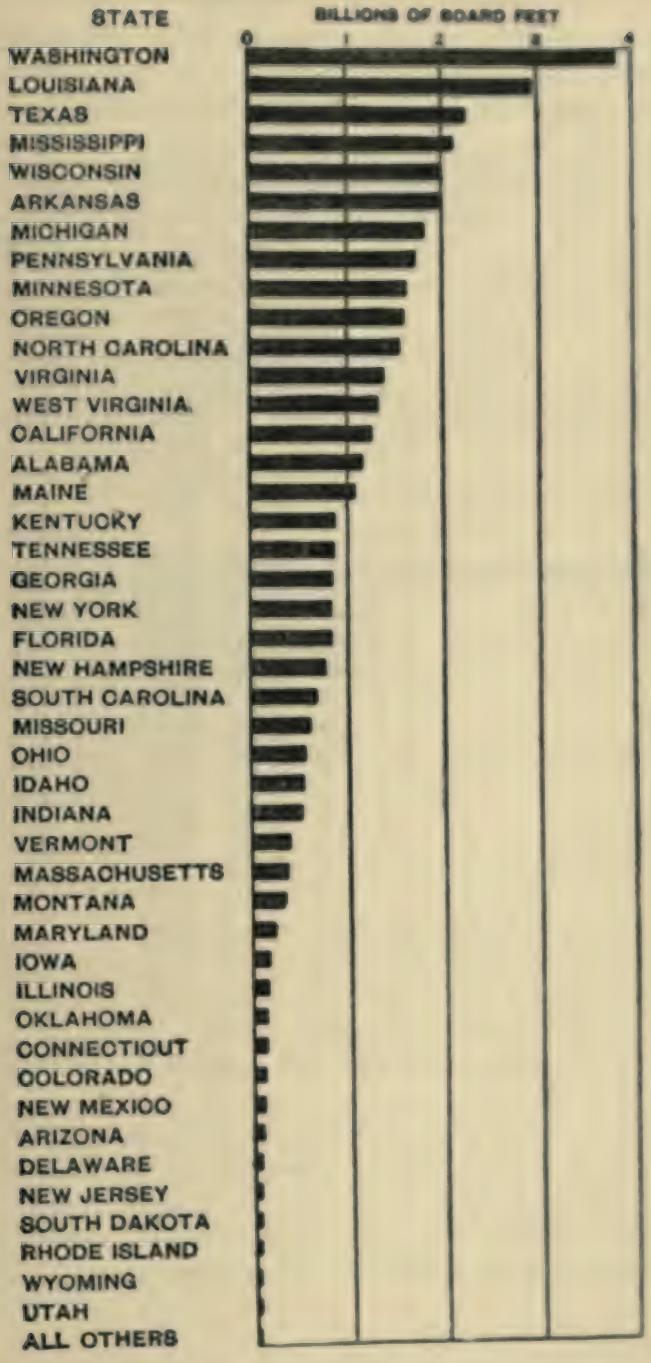
STATE.	Rank 1907	NUMBER OF MILLS REPORTING.		QUANTITY (M FEET B. M.).		Per cent of increase.	PER CENT DISTRIBUTION OF TOTAL CUT.	
		1907	1906	1907	1906		1907	1906
United States	.....	28,840	22,308	40,256,164	37,550,736	7.2	100.0	100.0
Washington	1	1,036	923	3,777,606	4,305,053	[1]12.3	9.4	11.5
Louisiana	2	581	434	2,972,119	2,796,395	6.3	7.4	7.4
Texas	3	678	322	2,329,590	1,741,473	28.0	5.5	4.6
Mississippi	4	923	642	2,094,485	1,840,250	13.8	5.2	4.9
Wisconsin	5	778	625	2,003,279	2,231,305	[1]14.1	5.0	6.2
Arkansas	6	1,146	835	1,988,504	1,839,368	8.1	4.9	4.9
Michigan	7	906	774	1,827,685	2,094,279	[1]12.7	4.5	5.6
Pennsylvania	8	2,181	1,482	1,784,729	1,620,881	7.0	4.3	4.3
Minnesota	9	429	318	1,660,716	1,794,144	[1]7.4	4.1	4.8
Oregon	10	644	557	1,635,563	1,604,894	1.9	4.1	4.3
North Carolina	11	1,668	1,210	1,622,887	1,222,974	32.7	4.0	3.3
Virginia	12	1,462	1,202	1,412,477	1,063,241	32.8	3.5	2.8
West Virginia	13	1,044	652	1,295,979	976,173	43.0	3.5	2.6
California	14	321	260	1,045,948	1,048,569	[1]0.2	2.8	2.6
Alabama	15	892	657	1,024,967	1,009,765	21.3	3.0	2.7
Maine	16	927	734	1,108,906	1,098,747	1.4	2.8	2.9
Kentucky	17	1,451	991	912,906	661,299	38.0	2.3	1.8
Tennessee	18	1,104	664	894,946	634,567	41.0	2.2	1.7
Georgia	19	788	622	853,697	831,675	2.6	2.1	2.2
New York	20	2,185	2,488	848,894	810,949	4.7	2.1	2.1
Florida	21	302	278	839,056	888,137	[1]5.5	2.1	2.4
New Hampshire	22	544	562	754,028	530,259	20.8	1.9	1.4
South Carolina	23	555	395	649,054	566,028	14.5	1.6	1.5
Missouri	24	916	567	548,774	507,064	8.2	1.4	1.3
Ohio	25	957	688	529,057	438,775	20.6	1.3	1.2
Idaho	26	247	198	518,788	418,944	22.6	1.3	1.1
Indiana	27	999	830	504,790	447,808	12.7	1.3	1.2
Vermont	28	613	514	378,640	329,422	13.4	0.9	0.9
Massachusetts	29	515	495	364,231	354,463	2.7	0.9	0.9
Montana	30	184	94	343,814	328,727	4.6	0.9	0.9
Maryland	31	307	222	213,786	219,008	[1]2.4	0.5	0.6
Iowa	32	100	73	144,271	163,747	[1]11.9	0.4	0.4
Illinois	33	499	366	141,317	141,374	0.1	0.4	0.4
Oklahoma	34	129	51	140,015	49,737	181.5	0.3	0.1
Connecticut	35	236	207	140,011	124,880	12.1	0.3	0.3
Colorado	36	220	138	134,229	110,712	21.3	0.3	0.3
New Mexico	37	51	33	113,204	103,079	9.8	0.3	0.3
Arizona	38	11	8	73,134	56,960	28.4	0.2	0.2
Delaware	39	106	85	50,892	44,457	14.4	0.1	0.1
New Jersey	40	166	130	39,942	36,253	10.2	0.1	0.1
South Dakota	41	64	40	34,541	22,634	53.9	0.1	0.1
Rhode Island	42	41	31	32,555	21,528	52.6	0.1	0.1
Wyoming	43	78	49	17,479	13,213	32.3	(3)	(3)
Utah	44	80	57	14,690	7,768	89.1	(3)	(3)
All other states[2]	.....	6	2	5,591	170	.....	(3)	(3)

[1] Decrease. [2] Less than one-tenth of 1 per cent. [3] Includes Kansas and Nevada.

The above table shows that in 1907 50.5 per cent of the lumber production of the United States came from the sixteen Southern States.

The rank of the various States in lumber production is shown graphically in diagram on next page.

DIAGRAM 1.—*Lumber cut, by states: 1907.*



A comparative summary of the lumber production, by species, rank, per cent of increase, and per cent distribution of the total cut for 1906 and 1907 is given in following table:

—Lumber production—quantity, per cent of increase, and per cent distribution of total cut, by species arranged according to rank in 1907: 1907 and 1906.

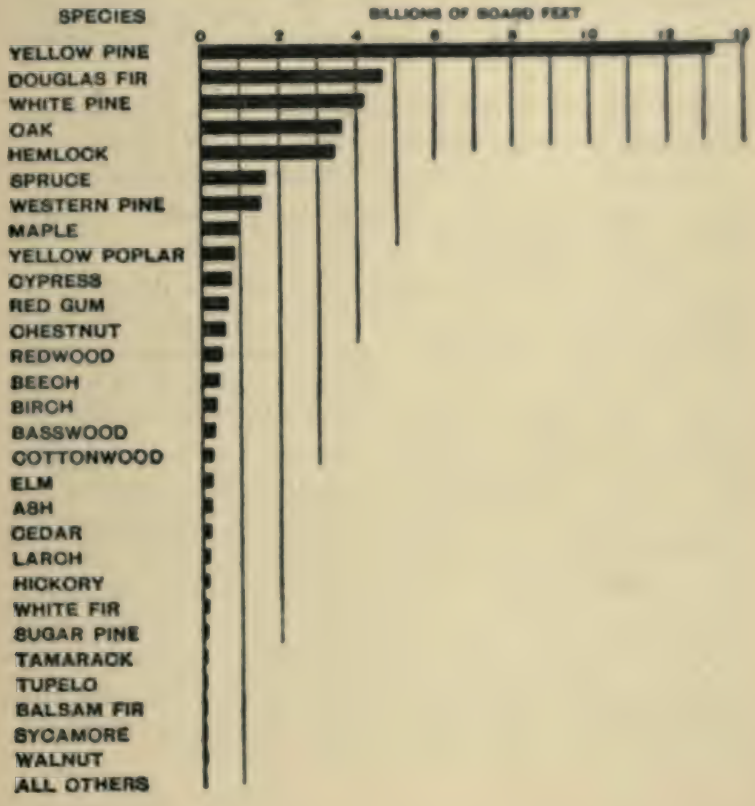
KIND.	Rank 1907	QUANTITY (M FEET B. M.).		Per cent of increase.	PER CENT DISTRIBUTION OF TOTAL CUT.	
		1907	1906		1907	1906
Total		40,256,154	37,550,736	7.2	100.0	100.0
Yellow pine	1	13,216,185	11,661,077	13.3	32.8	31.1
Douglas fir	2	4,748,872	4,909,843	[1]4.4	11.8	13.2
White pine	3	4,192,708	4,583,727	[1]8.5	10.4	12.2
Oak	4	3,718,760	2,820,393	31.9	9.2	7.5
Hemlock	5	3,375,016	3,537,329	[1]4.7	8.4	9.4
Spruce	6	1,796,797	1,644,987	9.0	4.2	4.4
Western pine	7	1,527,195	1,386,777	10.1	3.8	3.7
Maple	8	939,078	882,878	6.4	2.3	2.4
Yellow poplar	9	862,849	677,670	27.3	2.2	1.8
Cypress	10	757,639	839,276	[1]9.7	1.9	2.2
Red gum	11	689,200	453,678	51.9	1.7	1.2
Chestnut	12	653,239	407,379	60.4	1.6	1.1
Redwood	13	589,450	659,678	[1]13.7	1.4	1.8
Beech	14	430,005	275,661	56.0	1.1	0.7
Birch	15	387,614	370,432	4.6	1.0	1.0
Basswood	16	381,088	376,838	1.1	0.9	1.0
Cottonwood	17	293,161	269,458	8.8	0.7	0.7
Elm	18	260,579	224,795	15.9	0.6	0.6
Ash	19	252,040	214,460	17.5	0.6	0.6
Cedar	20	251,002	357,845	[1]29.9	0.6	1.0
Larch	21	211,076	166,078	27.1	0.5	0.4
Hickory	22	203,211	148,212	37.1	0.5	0.4
White fir	23	146,508	104,329	40.4	0.4	0.3
Sugar pine	24	115,005	133,640	[1]14.0	0.3	0.4
Tamarack	25	113,433	123,395	[1]8.1	0.3	0.3
Tupelo	26	68,542	47,882	43.8	0.2	0.1
Balsam fir	27	53,339	(2)	.....	0.1	.....
Sycamore	28	46,044	(2)	.....	0.1	.....
Walnut	29	41,490	48,174	[1]13.9	0.1	0.1
All other	.....	27,784	164,845	[1]83.2	0.1	0.4

[1] Decrease. [2] Not shown separately in 1906.

In 1907, as in previous years, yellow pine ranked first in point of production, the reported cut of that wood being 13.3 per cent greater than in 1906 and constituting 32.8 per cent of the total. Douglas fir ranked second, as in the two preceding years, although it showed a small decreased over the cut in 1906, due to adverse conditions in the producing territory. White pine, although showing a decrease of 8.5 per cent over the cut of the preceding year, ranked third, white oak displaced hemlock from fourth place. There was a marked increase in the reported production of oak, due to the much greater number of reports received from small

hardwood mills, while there was a slight falling off in hemlock. Spruce and western pine showed considerable increases. These seven woods, of which over a billion feet each were cut in 1907, yielded 32½ billion feet of lumber, or four-fifths of the entire cut. Among the woods manufactured in smaller quantities, particularly heavy increases are shown for yellow poplar, red gum, chestnut, and beech, which are undoubtedly due, as in the case of oak, to the larger number of reports from the smaller mills. The softwoods as a group furnished 31,001,225,000 feet of lumber, or 77 per cent of the total, and the hardwoods 9,254,929,000 feet, or 23 per cent of the total. The cut by species in 1907 is shown graphically in the following diagram:

DIAGRAM 2.—*Lumber cut, by species: 1907.*



Yellow pine is almost wholly in the Southern States. See following table.

—*Cut of yellow pine, by states: 1907.*

STATE.	Number of mills reporting.	Quantity (M feet B. M.).	Per cent distribution.	Total value.	Average value per M feet.
United States	8,384	13,215,185	100.0	$185,319,595	$14.02
Louisiana	408	2,345,912	17.7	34,402,894	14.67
Texas	614	2,197,233	16.6	30,349,892	13.81
Mississippi	659	1,692,195	12.8	25,216,356	14.90
Arkansas	634	1,249,133	9.5	18,096,392	14.48
North Carolina	1,427	1,146,288	8.7	14,245,676	12.43
Alabama	821	1,116,784	8.5	15,631,158	14.00
Virginia	956	869,935	6.6	11,239,447	12.92
Florida	285	761,690	5.8	11,415,810	14.98
Georgia	737	755,152	5.7	10,362,153	13.72
South Carolina	362	606,976	4.6	8,093,250	13.34
Missouri	227	119,164	0.9	1,396,880	11.72
Oklahoma	79	93,867	0.7	1,206,969	12.86
Maryland	140	81,541	0.6	1,053,719	12.92
Tennessee	146	62,441	0.5	811,609	13.00
All other states[1]	890	116,574	0.9	1,802,390	15.46

[1] Includes Connecticut, Delaware, Kentucky, Maine, Massachusetts, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia.

Louisiana led in yellow pine production in 1907, though Texas was a close second with a difference of less than 150 million feet. The center of yellow pine production has moved westward rapidly during the last few years. In 1900 Georgia was the leading State with 11.8 per cent of the total cut, while in 1907 it was ninth, with only 5.7 per cent, the absolute decrease in the production during these seven years being nearly 500 mililon feet. Texas ranked second in 1900, as in 1907, though with but little more than half its present output, while North Carolina ranked third, and Arkansas, as at present, fourth. Louisiana attained first rank in 1904, and its relative proportion of the total output has varied but little since that date. The cut of yellow pine in Mississippi has increased 76.1 per cent since 1900 while that in Arkansas has increased only 12.9 per cent. The increasing importance of Louisiana, Texas, and Mississippi as producers of yellow pine lumber is shown by the fact that their combined output equaled 27.7 per cent of the total cut in 1900, 36.5 per cent in 1904, 46 per cent in 1906, and 47.1 per cent in 1907.

The comparatively large production of the yellow pine mills in Louisiana is noteworthy. Its heavy cut was produced by a smaller number of mills than was reported by any other State of high rank in yellow pine production, the average cut per mill being in excess of 5,750,000 feet. Contrasted with this the 1,427 mills in North Carolina cut only a little more than 800,000 feet per mill.

The average value per thousand feet of yellow pine lumber in the various leading States in 1907 is remarkably uniform considering the several kinds of timber cut and the effect of shipping and market facilities, the difference between the lowest average value, $11.72 per thousand feet in Missouri, and the highest, $14.98 per thousand feet in Florida being but $3.26. A considerable proportion of the yellow pine lumber manufactured in Florida is longleaf pine which is exported, while that cut in Missouri is shortleaf pine, which finds a home market.

COAL RESOURCES OF THE SOUTH.

By L. C. Glenn,
Vanderbilt University, Nashville, Tenn.

Since the Conference for Conservation last May the people of our country have been aroused as never before to an anxious inquiry as to the extent of our natural resources and have begun to realize that instead of being inexhaustible as many had confidently supposed, they are of but finite extent and many are even now approaching exhaustion at an alarming rate.

Among these stores of natural wealth none is of more vital importance as an essential condition for industrial development than our stores of mineral fuel and of these stores, coal is by all means the one of chief importance. It is my privilege to invite your attention first to a brief inventory of the South's coal resources and then to a discussion of their profound significance as a fundamental element in her future industrial development. The first is an exposition and the second an interpretation of these resources.

The chief factors upon which the value of a people's coal resources depend are their area, distribution and extent, their quantity and their quality.

The United States have been endowed more richly with coal deposits than any other nation of the world. Of the various coal deposits in the United States the greatest area and incomparably the most valuable in content is the Appalachian field, stretching from northern Pennsylvania to central Alabama, with its area of 70,000 square miles of coal-

bearing rocks which have been calculated by Mr. M. R. Campbell, of the U. S. Geological Survey, to contain 635 billion tons of coal. This coal is superior in average quality to any similar quantity of coal to be found in any one basin in the entire world. It is the world's greatest coal field. Sixty-three per cent of the area of this great coal field lies south of the Mason and Dixon line and the Ohio River. If we turn to the distribution of coal within this great basin we will find that the southern part is more richly stored than the northern, for while the South has sixty-three per cent of the area of the basin it has over sixty-eight per cent of the workable coal. Nature has favored us then in giving us over two-thirds of the finest coal deposit of the world.

West of the Appalachian coal field lie two others of great importance—one, the eastern interior field, lies in Kentucky, Indiana and Illinois; the other, the western interior field, extends from Iowa to Texas and includes portions of Nebraska, Kansas, Missouri, Oklahoma and Arkansas. Of the eastern interior field about one-eighth lies in western Kentucky, but the west Kentucky coal, so far as can be judged by the analysis and tests so far made, is superior to the rest of the field in having a higher fuel ratio and in making an excellent coke that compares closely with the Connellsville, Pa., coke in analysis and physical characters. It bears both shipment and storage better than the coals from the Indiana and Illinois portions of the field.

Turning to the western interior field, we find that parts of the Arkansas and Oklahoma area have been folded in the Ouachita mountain uplift and certain of their coal beds have been changed to a semi-anthracite with a higher fuel ratio than any coal to be found outside of true anthracite areas such as that of Pennsylvania. Other Oklahoma-Arkansas beds contain an excellent coking coal. So that we may say of the western interior field, just as of the eastern interior field, that the highest grade fuel in the field is found in the portion included in the South.

If we turn from individual fields to grand aggregates both of area and of contents, we find that of the 250,000 square miles of anthracite and bituminous coal lands in the entire United States the South has 85,000 square miles and this area contains originally 590 of the 1,752 billion tons of such coal in the entire country. The South's area and tonnage are each almost exactly a third of the corresponding totals for the entire country. These quantities, however, are so enormous that they convey little or no definite conceptions, and in order to realize, at least partially, their meaning let us see them in a comparative way. We all know something of what her coal deposit has meant for Pennsylvania and for the many other States to which she has shipped a part of her deposits. The coal deposits of the South contain a tonnage five times as great as that of Pennsylvania, or greater than the combined tonnage of Pennsylvania, Ohio, Michigan, Indiana, Illinois, Iowa, and Kansas. If we compare individual States, the tonnage of Kentucky alone is nearly equal to that of Pennsylvania, while West Virginia could give away as much coal as has ever been mined in the entire United States during all the past and still have left twice as much as Pennsylvania has today.

And yet this is not all for in addition to this enormous tonnage of bituminous coal, we have additional fuel assets in our stores of oil and gas already being developed in many areas from West Virginia to Texas, and further reserve fuel assets in our 84,000 square miles of lignites in our Gulf States that even if there be no advance in methods of fuel utilization will ultimately furnish 25 billion tons of fuel for us either after the final exhaustion of our higher grade fuels or, as is much more probable, improvements in the produced gas plant, chiefly by way of decreasing the cost of production may confidently be expected to bring it into use long before our high grade coals approach exhaustion.

But area and quantity are not everything to be considered in discussing coal deposits. Of equal or perhaps greater

importance is the question of the quality of our coal. It is well known that bituminous coals vary greatly in the composition, physical properties and adaptability to various uses. We ordinarily recognize steam, domestic, gas and coking coals and frequently the same coal may be well adapted to more than one of the above purposes. Turning now to the coals of the South, we find that both in their wide range in quality and consequently in adapatability to various uses and in their purity and excellence they compare favorably with the coals of any other section. It is impossible to enter here into details as to the quality of the coals in the many coal producing districts of the South. Brief reference, however, will be made to certain regions, the quality of whose coals has gained for them a well established reputation. In Maryland the Pittsburg and other coals furnish most excellent steam, domestic and shop coals and enjoy wide popularity both at home and abroad. The purer grades used for smithing are shipped to the Pacific Coast and are exported to Canada, Mexico and the West Indies.

In northern West Virginia there is an extensive area of the Pittsburg coal that is mined both as a steam and as a coking coal. A high grade, smokeless, coking coal is produced in the New River region and the Kanawha field produces high grade gas and splint coals. In the southeast corner of the State occurs the famous Pocahontas coal, one of the purest and best coals in the United States, the equal of the Connellsville coal as a coke producer and of the best Pennsylvania and Maryland coals as a steam fuel. This same coal occurs in typical development and quality in southwestern Virginia and furnishes the bulk of her coal production.

In the Middlesboro basin of Kentucky and Tennessee more than fifty distinct coal seams are known, with an aggregate maximum thickness of 134 feet of coal. Of these, thirteen are of workable thickness and quality, and eight or more are now being worked. In their low percentage of

moisture, ash and sulphur they equal the best Appalachian coals and are excellent as coking and steam coals. Near this basin and extending also into the same two States is the well known Jellico coal, which commands a high price as a domestic fuel.

In Tennessee there are several seams of notworthy quality. One of the purest of these is the Bon Air, a high grade steam and domestic coal, while the most persistent and uniform over large areas is the Sewanee seam. It is more largely mined than any other seam in the State and is an excellent steam and coking coal.

In Alabama mention need only be made of the Pratt and Mary Lee seams that furnish more than half of the coal production of the Birmingham region and have already made this city the Pittsburg of the South, and have yet greater things in store for her in the near future.

In Arkansas and Oklahoma we have already seen that the best coals are semi-anthracite, and rank in fuel value above even the best of the bituminous coals. In Oklahoma some of the high grade bituminous coals are coking ones.

Let us next see the extent to which our coal resources have already been developed and exhausted. The following table prepared from Mr. Campbell's data shows the original available supply in short tons, the exhaustion up to the beginning of 1908 and the percentage of exhaustion. It is well to call attention here to the fact that for each ton of coal we actually use we leave in the mine and waste half a ton, so that the figures for the exhaustion in this table means that only two-thirds of that amount has actually been made of service to man, the remaining third has been lost for all time, and mainly through man's carelessness and greed, because it did not at the moment pay quite as well to mine the part left as the part removed.

	Original Supply.	*Exhaustion up to 1908.*	*Percentage of Exhaustion.*
Alabama ---	68,903,000,000	247,000,000	0.3 of 1%
Arkansas --	1,797,000,000	36,000,000	2%
Georgia ----	933,000,000	12,000,000	1.3%
Kentucky --	104,028,000,000	184,000,000	0.18 of 1%
Maryland --	8,044,000,000	221,000,000	3%
Missouri ---	40,000,000,000	146,000,000	0.36 of 1%
N. Carolina -	200,000,000	1,000,000	.05 of 1%
Oklahoma --	79,278,000,000	60,000,000	.07 of 1%
Tennessee --	25,665,000,000	126,000,000	.5 of 1%
Texas -----	8,000,000,000	14,000,000	.07 of 1%
Virginia ---	22,500,000,000	86,000,000	.4 of 1%
W. Virginia-	231,039,000,000	650,000,000	.3 of 1%
	590,383,000,000	1,783,000,000	.3 of 1%

Let us add the corresponding figures for the most prominent of the Northern States, in order that we may compare conditions North and South.

Pennsylvania	112,574,000,000	2,760,000,000	2½%
Ohio ------	86,028,000,000	739,000,000	.9 of 1%
Indiana ----	44,169,000,000	239,000,000	.54 of 1%
Illinois ----	240,000,000,000	968,000,000	.4 of 1%
Iowa ------	29,160,000,000	212,000,000	.7 of 1%
	511,931,000,000	4,918,000,000	.96 of 1%

From this table it will be seen that only three-tenths of one per cent of the South's coal supply has been exhausted, while nearly one per cent of the Pennsylvania, Ohio, Indiana, Illinois, and Iowa supply has been exhausted; or, the South has left today 330 times the coal she has already used and wasted, while this group of Northern States have left only 104 times their past usage. Pennsylvania has used up 2½ per cent of her original supply, or, she, the greatest coal-producing State in the Union, has travelled eight times as far along the road to exhaustion as the South has in the aggregate, or as either one of our two greatest coal-producing States, West Virginia or Alabama; while Kentucky and Oklahoma have consumed only a half and a fourth respectively of the general average of the South. We have then our

coal deposits much more nearly intact than these Northern States have.

Coal, however, when once dug does not reproduce itself again, but is gone for good and at whatever rate we dig our coal we approach at just that same rate the time of final exhaustion. Let us turn next to the question of the time of the ultimate exhaustion of our coal supply. How remote is the day when our last available pound of coal will have burned and we shall have to turn to some other source of heat and power or lapse back into barbarism once more? We have already seen that our available supply of coal is less than 600 billion tons and that we have used up nearly two billion tons. How long will the rest last? Turning to our annual production of coal, we find that the twelve Southern States mentioned in the table above produced in 1907 a total of 92,470,429 tons of coal. When we have added one-half of this to represent the coal left in the mines and thus lost, we find that our last year's production represents an exhaustion of 138,705,643 tons. The amount of coal remaining undug at the lose of 1907 in these same States was 588,600,000,000 tons, or 4243 times last year's exhaustion. In other words, the South could mine coal for 4243 years at the same rate she mined last year before her last ton would have been dug from its place in the earth.

Before these figures fasten themselves in your mind, however, let me hasten to point out the one fundamental condition upon which alone their value would depend. It is that the rate at which we mine coal in the future shall be the same as last year's rate. This condition, however, is manifestly impossible. Our annual production, instead of being constant from year to year, is increasing by leaps and bounds, in something like a geometric ratio, and no man can tell when this rapid rate of increase will end. We can, however, with the utmost confidence assert that the coal production of the South—great as it already is—is yet in its infancy, and that

it is destined to rise in the next fifty years to figures that we today perhaps no more than dream of.

And let us see why. The South has been slow—yes, phenominally slow, in the development of her coal and other mineral resources. A great agricultural community before the Civil War, and exhausted for years after its close, she has but recently gathered strength to enter upon that era of industrial development that is even now but just dawning. Her production is now increasing much more rapidly than any other part of our country. A few moments only are necessary to demonstrate this.

The great bulk of the coal production of the country has always come from the States east of the Mississippi River. In 1907 these States produced 88.6 per cent of all the coal produced in the United States. If we divide these States into a northern group consisting of Illinois, Indiana, Ohio, Michigan, and Pennsylvania, and a southern group consisting of Maryland, West Virginia, Virginia, Kentucky, North Carolina, Tennessee, Georgia, and Alabama, we will find that while the northern group has produced ten times the coal in 1880 than the southern group did, this ratio fell in 1890 to six times, in 1900 to four times, and in 1907 to only three and half times the amount the South produced. Since 1870 this group of eight Southern States has more than doubled its annual coal production each decade except for that between 1880 and 1890, when they more than trebled it, and yet this increase has come from the development of only small portions of the coal area of the South. Many of our coal areas are reached by transportation at only a few points about their margins, while the vast proportion of their areas remains untouched because as yet inaccessible. Much of even the West Virginia coal is without transportation, and the same thing is even more true of Kentucky, Tennessee, and the other States both east and west of the Mississippi. Railroads are building and will continue to build into these undeveloped areas so that the stimulus of increased demand

will for years be promptly met by an increased production. Adopting and adapting the language of Paul Jones, the South might truly say that she has scarcely begun to dig coal yet.

Bearing in mind, then, the rapid increase in the coal production of the South in the past forty years, the rapidly expanding industrial activity, the building of railways from our coal fields to our Atlantic and Gulf ports, the improvement of our rivers, the digging of the Panama Canal, the exhaustion within the next thirty or forty years of the Lake Superior iron ores and the consequent inevitable transfer of the center of iron production to the South with its enormous fuel demands—bearing in mind all these, we are warranted in saying that the coal resources of the South will be well nigh exhausted by the close of the next century or the middle of the one following—say by the year 2150.

What is the meaning of it all? What, with the custody of the South's enormous coal resources in our hands, are our opportunities for our own time and our duties to our posterity? In interpreting the potentialities to the South and to the nation of its 590 billion tons of coal, let me call your attention in the first place to the geographic distribution of these coal deposits and their consequent ready accessibility to all parts of the South and to much of the world besides.

Note the way in which the Appalachian field pierces the very heart of the eastern half of the South and lies almost equally near to the Atlantic seaboard, the Gulf and the Mississippi River. What an inestimable boon it would have been to New England had the northern part of the Appalachian coal field extended in like manner into her midst! What an opportunity to this eastern half of the South to obtain fuel either by rivers that float it westward or southward or by railroads that may run radially and deliver it to all parts of the South by a down-grade haul.

Looking west of the Mississippi, we see an equally fortunate distribution. The coal area is a long belt extending

from Missouri well into Texas, set well back from the Mississippi river and ready to supply not only the immediate area around but also the far west.

Then, too, in consideing the coal resources of the South, and their geographic distribution, attention should be called to the fact that, owing to peculiar geographic conditions, coal from Pittsburg can be floated down the Ohio and Mississippi rivers and delivered to all river points more cheaply than it can be carried by rail from the nearby Southern fields. From this cheapness of transportation, Pittsburg coal will always be largely used in the Mississippi river region and so becomes in effect a very real and extremely important part of the coal resources of the South even though mined beyond its borders.

The fortunate geographic distribution of our coal, making easy its distribution, to all parts of the South, unfortunately also makes it easy to export, and railways have been built and others are building especially to deliver coal at the seaboard for exportation, and this movement will be wonderfully stimulated upon the opening of the Panama Canal a few years hence. I believe it is against our wisest national policy to ship our coal away from home. Coal in more senses than one is power and the foreign dollar for which we bargain away our fuel wealth will never quicken the pulse of trade or turn the wheels of industry as the coal itself would have done had we kept it and burned it at home. We might, with far greater profit, ship, if need be, to the outside world the things we had made by its use rather than the coal itself, or, after satisfying our own necessary requirements, we might rise to the higher duty of leaving the remainder undug as part of our posterity's birthright.

Not only is our coal favorably situated for economic distribution to all parts of the South, but it is peculiarly favorable for the development of our forest resources, our cotton, and other manufacturing industries, and the smelting of our iron, copper, lead, zinc and other ores, and for calling into

existence the many technical industries that should naturally spring up where these useful metals are first won from their ores.

The largest stock of hardwood left in the United States today is growing either on the very area that contains the coal or on the high Appalachian ranges just to the east of the coal fields. Power for its manufactures into multitudes of finished products is stored beneath the very roots of the forest itself, and we should seize our opportunity in the myriad of wood-working industries and cease shipping away our rough lumber or unsawed logs. The South must be the nation's future dependence for hardwoods and hence there is a great field for development just here.

The heart of the great cotton mill region of the South is found in the Piedmont region of the Carolinas just east of the Appalachian mountains. Originally dependent on streams for power, they have outgrown local stream powers and are now largely dependent upon the coal from West Virginia, Kentucky and Tennessee. New Railroads are pushing from the coal fields across the mountains to supply the rapidly growing needs of the region and coal must play a vital part in the further development of cotton manufacturing in this region. Looking at our map, we see the Southern end of the Appalachian field piercing in Alabama the very heart of the cotton-growing section and the same is true of the Arkansas Oklahoma and Texas fields.

What an opportunity for cotton manufacturing in both these sections, and with the opening of the Panama Canal, what a strategic position they would occupy in the contest for the cotton trade of the world. From the present small beginning the possibilities of cotton manufacturing with the raw material and the fuel side by side are enormous and we should soon manufacture at least nine-tenths of our raw cotton. Our opportunities are equally great in many other industries where cheap fuel is a necessity.

Even greater opportunities, however, are ours in the role

our coal must play in the smelting of our ores and the development of the many industries that result therefrom. Of these ores the chiefest is iron. Our iron ores will be discussed by another speaker. I would, however, emphasize the enormous advantage accruing to the South in having our ores, flux and coal already assembled for us by nature, often lying in the same mountain side by side. Pennsylvania must get her ore from far away Lake Superior. In Tennessee and Alabama you can almost hurl a stone from the coal seam across the limestone to the iron ore seam. The most careful estimates indicate the exhaustion of the billion and half tons of the Lake Superior iron deposits in the next thirty years. Our two and half billion tons of iron ore supplemented by additional large deposits just now being investigated in eastern Alabama will then inevitably swing the center of the iron industry to the South and our coal supplies will then become even more profundly significant factors in our industrial development than they have ever been.

All of these facts make it certain that the utilization of coal in the South must soon be on a scale hitherto unknown, and while I would say let us use it in as large measure as we need it, let us at the same time realize its value and conserve it from useless waste. It is possible to conserve our coal resources in a number of ways. Under the mining methods of today we leave in the mine one ton on the average for each two tons removed. By more careful mining methods, this waste could be materially lessened. Pillars of coal left to support the roof and parts of a seam left intact on roof or floor might be removed even if at a somewhat increased cost.

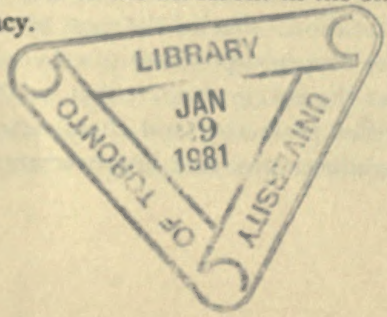
Much of the coal now mined is wastefully burned and great economies in this direction are undoubtedly possible in its more economic utilization. One of the most promising is that of converting the coal into producer gas, by which we get two or three times the energy from it that we do in the stream engine. Further perfecting and cheapening of the process of making producer gas, and improvements in the

gas engine may be confidently looker for, and when they come the potentiality of our coal will be increased several fold.

Again much of our coal today is converted into coke and only an extremely small fraction of this coke is made in by-product ovens that utilize the full value of the coal. Our old bee-hive coke ovens are fearfully wasteful and extravagant. By their use a third of the power and a half of the value of the coal is lost. We need to revolutionize the coke making industry by the abolition of the bee-hive oven—by statute, if necessary, and the substitution of the by-product oven. The gas, tar, ammonia and other products thus saved would be utilized for heating and lighting our houses, paving our streets, and fertilizing our fields and would furnish the raw materials for a development in America of the great coaltar chemical industry now almost exclusively in the hands of the Germans.

Another method of conserving our coal resources is to properly develop and utilize the several million undeveloped horsepower of our streams. Electrical transmission makes it perfectly feasible today to develop and transmit economically the power of our streams to any point within a radius of one or two hundred miles. Undeveloped waterpower is so widely distributed, especially in the eastern half of the South, that if properly utilized it could turn the wheels of all our present industrial establishments, be subject to perpetual use, and add long lease of life to our coal resources.

Our coal resources properly developed and wisely used have undreamed of potentialities that must ere many decades have passed, revolutionize the industrial activity of the South and force her to the forefront in the struggle for industrial supremacy.



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