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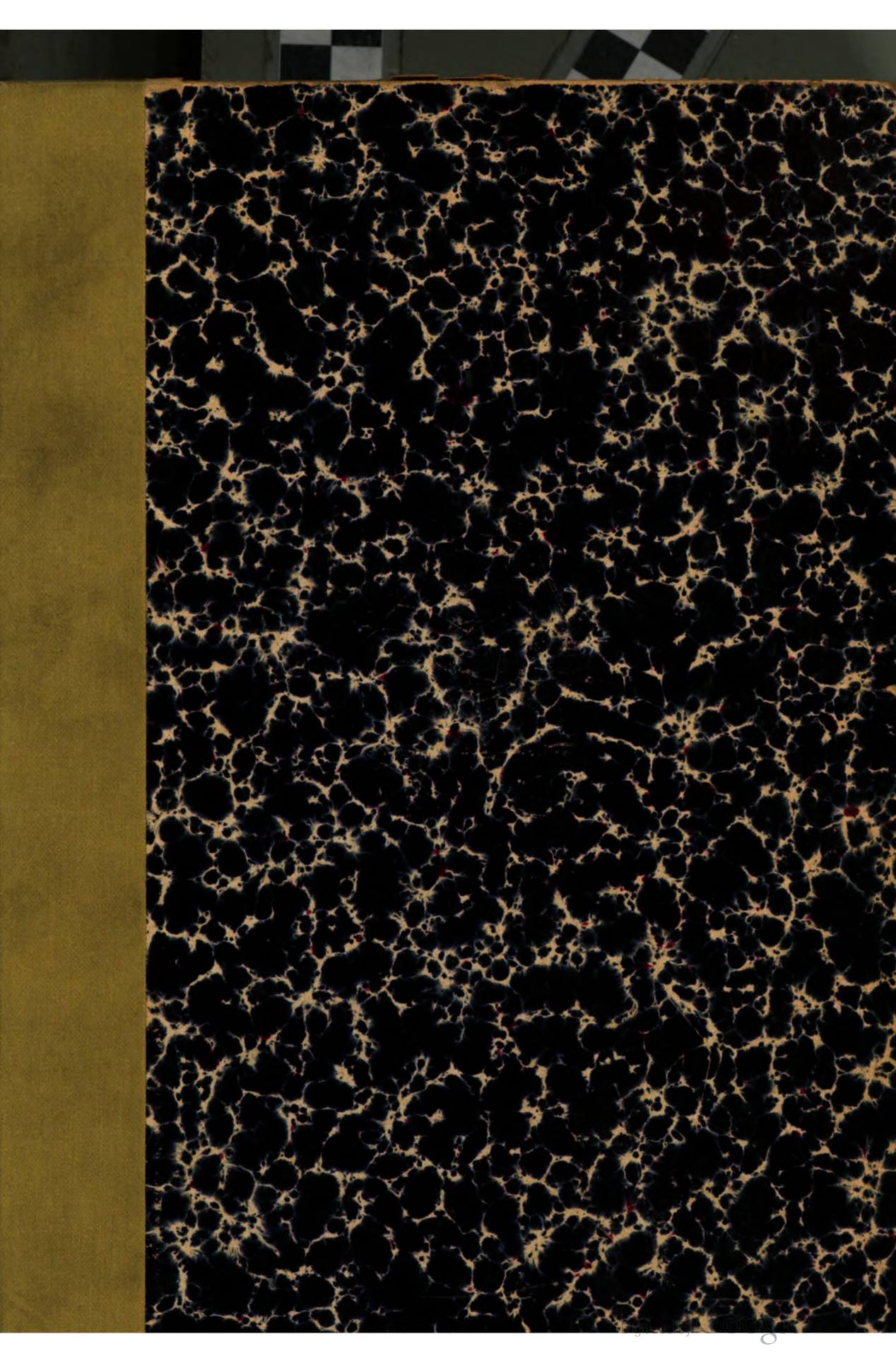
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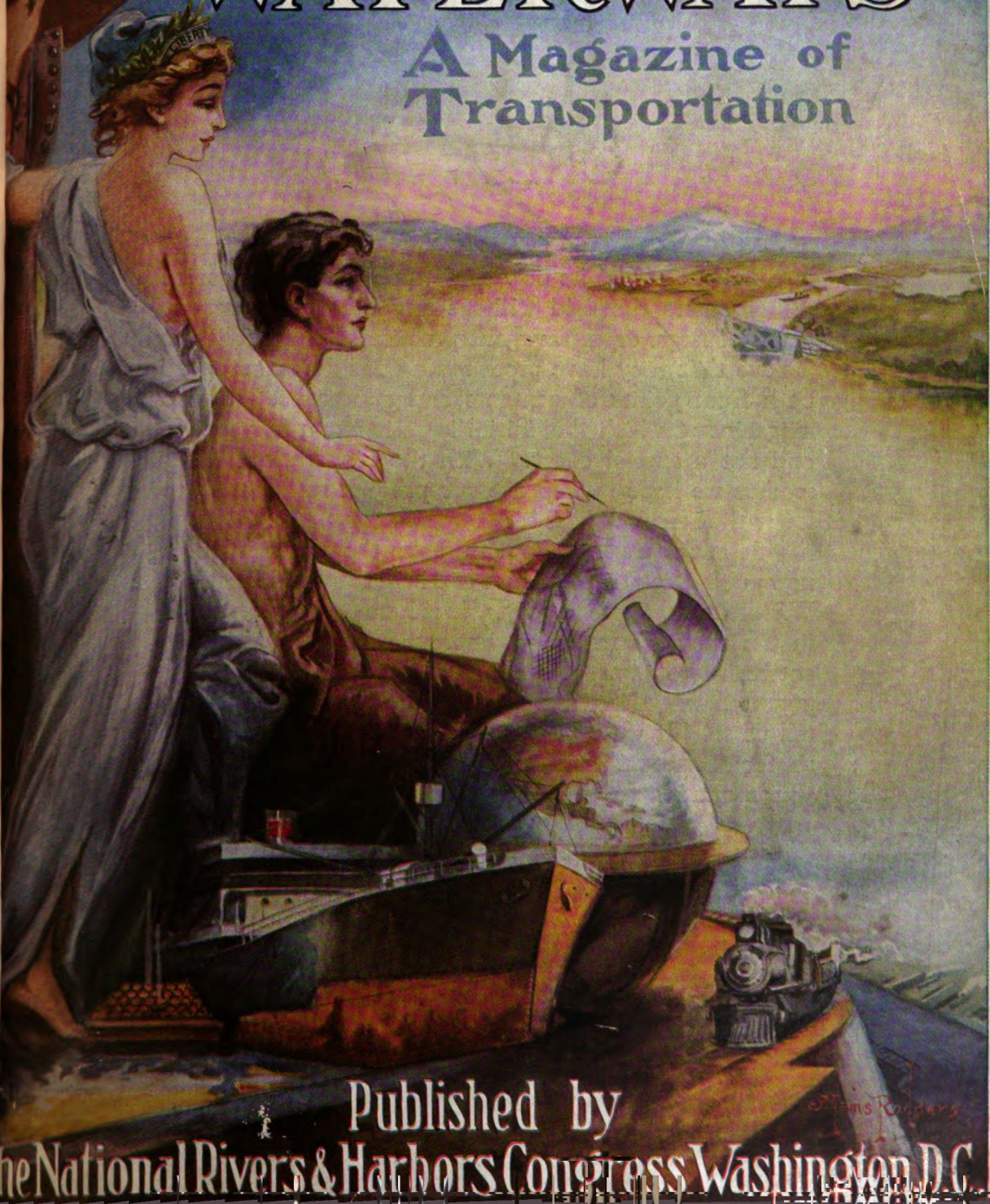


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NATIONAL WATERWAYS

A Magazine of Transportation



Published by
The National Rivers & Harbors Congress Washington, D.C.

H. E. 281
1912

FOREWORD

NATIONAL WATERWAYS with this its initial issue makes its bow to the public. The magazine enters the field without any blare of trumpets, flurry of flags, or extravagant promises. The publishers believe that they have produced a good magazine, good both from points of contents and appearance—a good magazine of which this initial issue is but a fair sample and not a special effort. With the cooperation of our readers we hope to improve our product rather than to lower the standard here set.

It is the usual custom to make the statement of a new publication that it is here and here to stay. NATIONAL WATERWAYS is here to stay. It is here to work earnestly in the cause of waterway improvement. It is here to entertain, to instruct, and to please. Study well the pages submitted in this issue, and if we gain your approval, tell us so. If we do *not* reach your ideas, again tell us so, for NATIONAL WATERWAYS is its readers' magazine—*your magazine*.

NATIONAL RIVERS AND HARBORS CONGRESS.



1131548

VOL. 1

No. 1

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*

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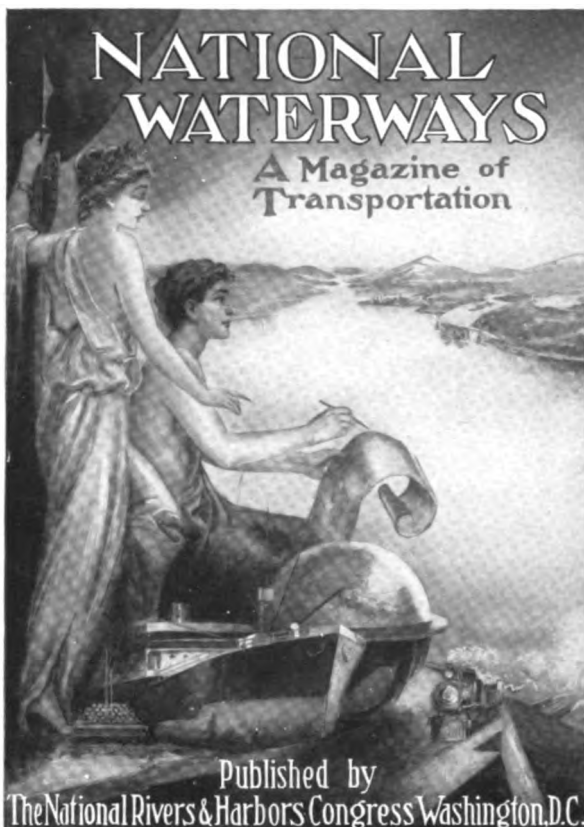
Published by the NATIONAL RIVERS AND HARBORS CONGRESS

JOS. E. RANSELL, PRESIDENT

S. A. THOMPSON, SEC'Y AND TREAS.

824 COLORADO BUILDING, WASHINGTON, D. C.

THE VALUE OF AN INTRODUCTION



TO APPEAR AS AN ADVERTISER IN NATIONAL WATERWAYS IS TO RECEIVE AN INTRODUCTION THAT AMOUNTS TO A POSITIVE RECOMMENDATION TO THOUSANDS OF THE MORE SUBSTANTIAL AND PROMINENT PEOPLE IN THIS COUNTRY

"Mr. Smith, this is Mr. Jones, who has my full confidence. He desires to talk a moment with you on a worthy proposition that I think will interest you."

Now—

The man speaking is—say Mr. Johnson. You know Mr. Johnson. He was, perhaps, with you at school—at any rate, you and he have been long associated and together have worked out some big problems. You value his judgment. You know he is sincere, but, best of all, you know he is honest and wishes you well.

Would you listen to Mr. Jones? Wouldn't you be interested by what he had to say? You would, wouldn't you?

Well—

Readers of NATIONAL WATERWAYS have long been associated with its publishers. They have, as members of the National Rivers and Harbors Congress, together worked out some big problems—problems that have much to do with the millions now being spent

by the Government on waterway improvement. They expect to believe and have a right to believe that the recommendation given to any proposition through the pages of this magazine is correct and that the copy is clean.

We shall be pleased to present you—

If you have that kind of a proposition; if you write that kind of copy; our pages are cordially open to you and our introduction to our readers will carry an actual guarantee of you as an advertiser. Our readers, too, will appreciate your support, for this publication is decidedly its readers' magazine and is not a commercial one; there are no stockholders and no dividends are expected to accrue. Every dollar that is received goes right back into the magazine to improve its quality, to extend its circulation and to help the cause it represents.

When you advertise with us you secure a positive recommendation to thousands of the more substantial and prominent people in this country. At the same time you are addressing an audience that appreciates fully your support. Where else can you find this ideal combination of quantity, quality and attention?

NATIONAL WATERWAYS.

CITIES DON'T GROW—they are built

COMMUNITIES DON'T ADVANCE— THEY ARE PUSHED

“THE old order changeth.” Time was when the city and its community took little thought of its advancement. It simply “just grew,” or it simply just didn’t grow, while its citizens thanked or blamed Providence and let it go at that. Only recently has it occurred to property owners, to business and to professional men, that with the stranger within the gates, the new resident and his family, and the new manufacturer comes exclusively the pure gold of community advancement and of individual prosperity.

Prosperous communities have quit trying to grow—they have commenced to build. There are two great forces that have cooperated to bring about this new era. The one, that new type of citizen, *genus booster*, who has done the dreaming, but hustled while he dreamed. The other is the printed page—Community Advertising—for through this dynamic force town after town is being put on the map of the prosperous. Your city, your community, has its advantages. Perhaps you lead in one or more essential things; but little good will it do you or your town, unless you tell the world—unless you advertise.

DOES IT PAY?

A city in the Middle West several years ago spent \$40,000 on Community Advertising. It secured a number of manufacturing plants, marked increase in property values and, best of all, 2,000 workmen with their families. The most humble workman with his family produces each year about \$1,000 in payroll wealth. The wealth, by the way, on which any community must almost exclusively depend. What then did these 2,000 men mean to this advertising city? The astounding increase of \$2,000,000 each year of money in circulation. Remember, too, that the advertising cost was only a one-time cost, while this increase in payroll wealth is a permanent asset.

In one of our leading convention cities visitors leave each year \$1,400,000 of new money. These conventions are secured through Community Advertising. Again, a city in the South raised her first advertising fund by certain property owners giving \$1.00 for each front foot of property that they owned. In less than a year’s time there was a \$10.00 per front foot advance, which means that every man who donated to this particular advertising fund, received the considerable honorarium of 1,000 per cent. on every dollar that he had invested.

These are not extravagant or unusual examples, but could be added to at great length. There are also many instances of towns of even less than 5,000 population that have advertised and gotten as good proportionate results for the money expended.

NATIONAL WATERWAYS’ staff has men who have been prominently identified with many of the most successful Community Advertising Campaigns. Their services are at your disposal. Get your “boosters” together and we will send you an expert who will assist without charge in raising your fund and in any other way in which he can be of value. All we ask is that you consider the obvious merits of NATIONAL WATERWAYS as one of the mediums for your Community Advertising.

Address, NATIONAL WATERWAYS,
WASHINGTON, D. C.

JAMES WM BRYAN, *Business Manager*

WASTE CIRCULATION



"GWAN, WHITE MAN"

The editor, compositor, circulation manager, printer's devil, etc., of the *Daily Bugle*, published in a small southern town, had taken his lonely way to the tumble-down cabin of Aunt Mirandy. He had gone because Mirandy had sent him by a pickaninny a crumpled note to the effect "I don't want yo' papah no mo'"—and most eloquently he had pleaded that the discontinuance order be revoked, but to no avail. He had just taken a fresh start on his argument when Mirandy interrupted by saying: "Gwan, white man; I ain't got a speck er use fer yo' papah, 'cause you see, it am jes lack dis—mah boys Pete and Mose dey done gone and git in jale where dey gits dere dinnah and I don't need yo' papah no mo' to wrap up dere lunch, so what's I gwine ter do wid it? Answer me dat."

This illustrates in rather exaggerated form the great question of waste circulation—the question that is the bug-a-boo—the old man of the sea to the whole advertising fraternity.

WHO vs. HOW MANY

All of us are inclined to listen to the persuasive talk of "A million copies a month," "The whole nation as an audience," etc. But a little concentrated thinking on this proposition will make the cold facts stand out like a sore thumb. How many have a proposition that could interest even a tenth part of a million subscribers to any publication? You can count them on your fingers without bothering your thumb, for there are precious few. The wholesale circulation, it is admitted, will reach the people you want to reach, but how many Aunt Mirandies of ignorance, of indifference and inability? Yet you pay for every copy.

- The *who* of subscribers is vastly more important than the *how many*. It is quality in this that counts. You would not pay good money to send a representative to the Eskimos if you were making electric fans, but the chances are that you are now paying just as good money for space that carries your message to thousands of people equally as disinterested.

NATIONAL WATERWAYS hasn't a million circulation. It has, however, a hefty number of thousands, and quality is its king pin—not that you have to be of sound mind and present a clean bill of moral and physical health to become a subscriber. Not at all. You simply have to have the price. But our circulation is being built up in a unique manner.

Some several thousand bank presidents, captains of industry and other leading citizens are talking NATIONAL WATERWAYS all over this country and taking subscribers. Who is it that they are likely to secure? The messenger boy, the ten-dollar clerk, or any of that class? Hardly, but instead their own associates. Men of substance who live well, buy largely, and have the cash money with which to do it.

Our distribution is national. Where you find a lake, river, harbor or canal (and there are over 50,000 miles of them in this country), there you will find readers of NATIONAL WATERWAYS. It is *almost* a distinction to be a subscriber to NATIONAL WATERWAYS. It is a distinction to be admitted to its advertising pages, for they will be conducted so as to carry the approval of our members and subscribers.

If you have a high-class proposition, one that will bear scrutiny, and that will appeal to a blue list of the nation's best business men, NATIONAL WATERWAYS is the place for your copy. Our rates are based on amount and not quality of circulation. You get exactly what you pay for based *entirely* on the amount and there will hardly be a copy that could be branded as waste circulation. A postal card will bring our rate card and statement of our circulation.

Address, NATIONAL WATERWAYS,

WASHINGTON, D. C.

JAMES WM. BRYAN, *Business Manager*



THE LARGEST SHIP AFLOAT
HAMBURG-AMERICAN S. S. EMPEROR
Courtesy Hamburg-American Line

NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I

NOVEMBER, 1912

NUMBER 1

THE CHARM OF FOREIGN WATERWAYS

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

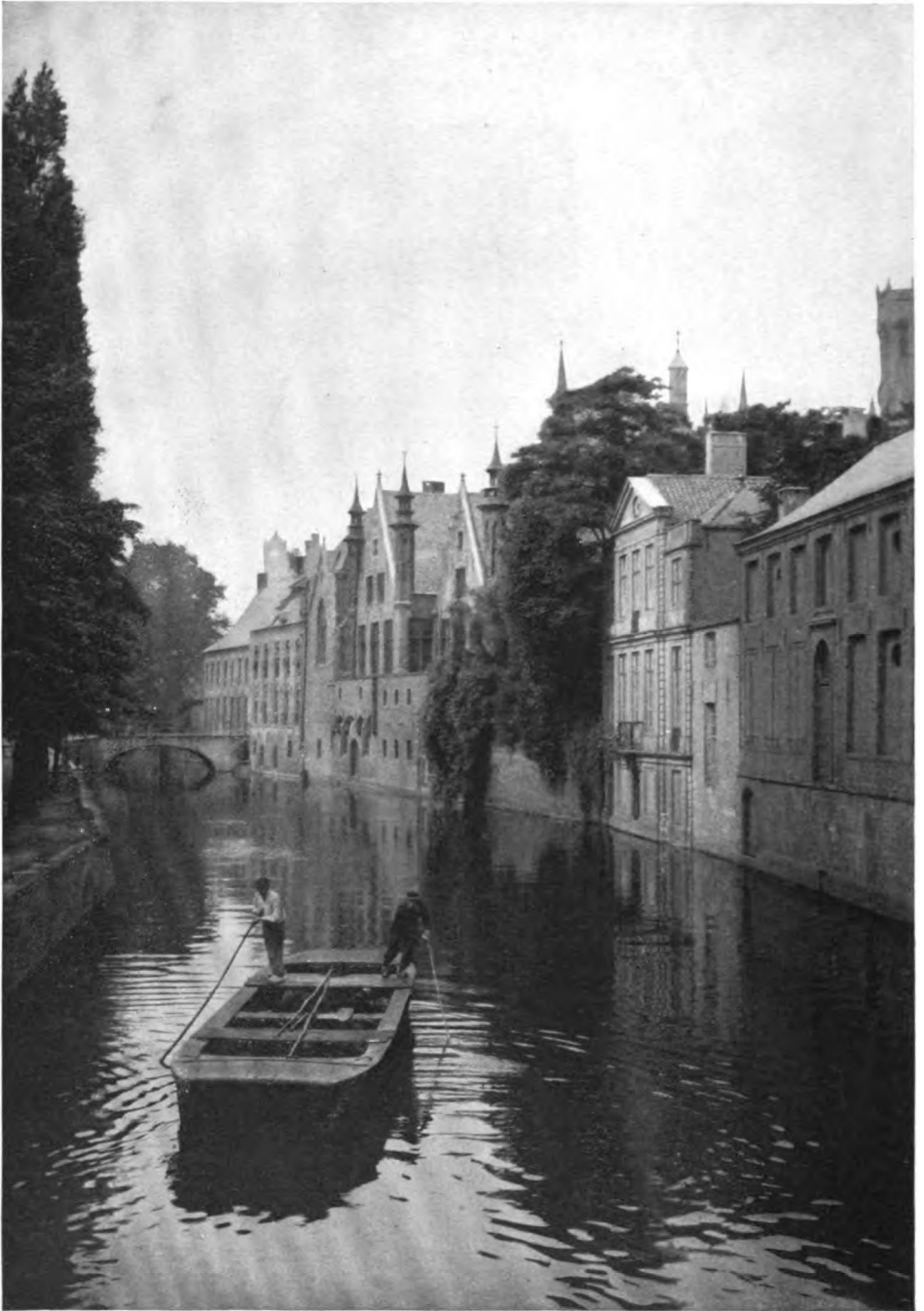
MR. AND MRS. ALBRECHT *have for many years spent much time traveling in foreign lands. They have not followed in the beaten paths of the tourist but have sought out the unfrequented places and have made faithful records, he with the camera and she with the pen, of all that was quaint and beautiful. These they have together woven into many charming articles, which have had wide publication in leading periodicals.*

TO that happy traveler whose itinerary has once included Venice, "waterway" forevermore invites a vision of blue, rippling water, of umber sails, of somber gondolas with silvery fringes, of stately old palaces and bubble-like domes all doubled by reflection, of dazzling sunshine and purple shadow, and the far cry of gondoliers mingled on the wind with the perfume of oleanders and the salt tang of the sea. But not every city can be a Venice—fortunately, indeed—and while she reigns mistress of waterways forever there is no sting of reproach in the inspiration that she freely offers; her problems are not ours, her beauty is unique, we cannot aspire to it. But is this true of all her sister cities? Can we look upon the Tiber tamed between stone quays, made Rome's servant, rather than its master, yet losing not a tithe of beauty in its restraint; upon the Seine rippling beneath Paris bridges; upon the Thames mirroring

Westminster's towers; upon the Elbe as it hurries by Dresden's quays, and not feel that our river-washed cities have wasted opportunities both for beauty and profit?

Water, while being made useful, need not necessarily be made hideous. If we, youngest among the great nations, have taught to the older peoples something of easy living, of the comfortable possibilities of good plumbing and porcelain bathtubs, the advantages of vestibuled trains, of steam heat, of elevators, matters of which every returning tourist boasts, there seems yet no need for undue elation; we have certainly much to learn from those lands across the sea.

Rich endowment we have had of lakes, streams and rivers. Water lovers we profess to be, yet how have we used our waters? Only too often in making it useful, a river has been rendered ugly; when effort has been expended to preserve



THE CANAL THAT RUNS THROUGH THE HEART OF BRUGES FROM
THE QUAI DES MARBRIERS

its natural beauty a stream is frequently made useless. Is that necessary? Cannot utility and beauty be made to dwell together?

The little, old cities of the Netherlands have made a useful servant of their one-time enemy—water—and who that knows them will not say how much the lovelier they are for that water girdle which rings them amid their green meadows, even while it serves them as a pathway for going and coming freight?

Amsterdam, Venice of the North, as a poetic traveler named her, is ribbed and ringed with canals upon which heavy barges are incessantly moving, yet who can think that Heerengracht, stateliest of ancient streets, loses one whit of its dignity because a blue-bloused boatman poles a high-piled barge under the shadow of her lindens, its ripples setting all the placid gable reflections a-quiver?

And that magnificent windmill upon the Coolvest at Rotterdam! Is it any the less lovely that its great wings are mirrored in dancing water, that a white-sailed boat glides quietly to a mooring by its side? Is the water less clear, less joyous under the sky's clear blue, less radiant under the beams of sun or moon, that it also serves as burden-bearer for a great city?

What great waters sweep by Dordrecht and through it, and around it, and how proudly its old church sits there, although today it has much ado to raise its great tower above the slender masts that crowd thickly about it! Ah well! Dordrecht is perhaps, like Venice, a city apart and not to be compared with others, nor yet used as a lesson book—but what one of our river-set cities of twice its size and wealth can compare with it in picturesqueness and service?

Breda, town of many warlike memories, though now so stilly peaceful, is ringed by the Mark and the Aa, two tiny rivers that have been taught to serve it well; as a moat in the days of its sieges, as a pathway for its present small commerce, and with sodded and tree-planted banks to adorn and frame it as well. The stately old gray church-tower soaring among



FLORENCE CRAIG ALBRECHT

green branches into a turquoise sky, the scarlet roofs of the low houses, the dark walls, the luxuriant foliage, are all reflected in the azure mirror at their feet. An unpretentious town, sleeping placidly amidst its meadows, is made a lovely memory through its water-given beauty. And Zierikzee, with its beautiful old gates, its quaint gables—how much the lovelier is it for the water which reflects them, the water

without which it could not exist! By waterways alone it meets its neighbors, it sells its products, it buys for its needs, and Zierikzee, although very tiny and very old, has taken care that the mirror which perpetually surrounds it and at which it must look daily shall at least afford pleasant pictures. Or so it seems to me, for at Zierikzee no rickety wharves, no squalid sheds are doubled to tease one's eyes as at some nearer towns one might mention, but substantial walls, stout-towered gateways, tall trees, look down upon the waters, the green-grayness now and then made gay by a scarlet roof, a blue blouse, the glint of gold and coral under a white cap when a head peers from a window above the wall or a pretty maid walks beneath the trees. One may go to Zierikzee by a modern and comfortable steamboat—one usually does go that way—but the poetic way is to sail up under its walls in some dark old *tjalck* with brown sail wide-spread, and at the tiller a picturesque young blond skipper like our friend Klaas Kees of Marken. Zierikzee would be jealous if one brought a man from the Zuyder Zee to sail her waters, but if one has come by boat—as one can—all the way from Urk or Volendam, Kampen or Marken, of course she has nothing to say. As to the picturesque side of the question, it would not be worth while to explain; Zierikzee would not understand. She is not self-conscious—that is so far as beauty goes; that, perhaps, is her greatest charm.

I am not sure the same is true of Bruges. She is very old and very sad, we are instructed, but I don't half believe it. Old—yes, undoubtedly—and no longer prosperous as she once was prosperous, a

OLD GUILD HOUSES ON THE QUI
AUX HERBES—THE RIVER
LÿS, GHENT

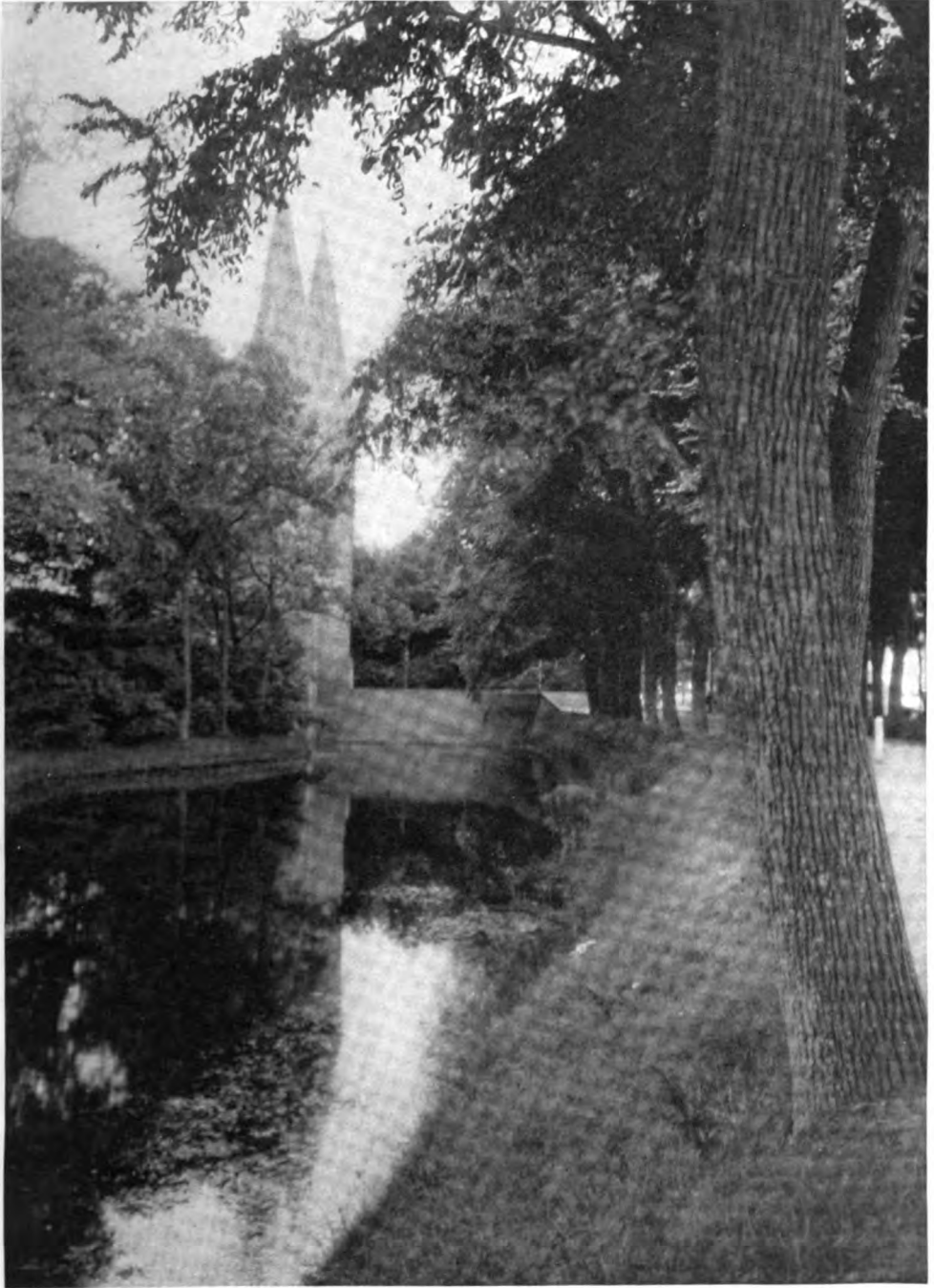


ON THE CANAL FROM ROTTERDAM
TO DELFT

ON THE SINGEL GRACHT, AMSTER-
DAM—THE RÿKS MUSEUM



VENICE—LOOKING FROM THE MOLO TO
SAN GEORGIO—“A VISION OF BLUE,
RIPPLING WATER, OF SOMBER
GONDOLAS WITH SILVERY
FRINGES”



THE NOBELPOORT AT ZIERIKZEE ON THE ISLAND OF SCHOUWEN, HOLLAND

great commercial city important in the world's markets. But she has a great many visitors and that spells another kind of prosperity, so, I fancy, under her air of quiet sorrow she chuckles a bit in her sleeves; that air is a part of her attraction, and she knows it. I may, however, be quite mistaken; travelers' impressions are untrustworthy unless backed by statistics. Of her loveliness there is no question. The commerce for whose accommodation those stone-lined canals were constructed may have all departed. Their beauty remains. One realizes what Bruges must have been in the days of her prime, when gay courtiers and rich merchants thronged her market places and all those grave canals, where swans now sail so quietly, whose ripples are set infrequently a-dancing by one slow-moving boat, were covered with heavily-laden barges bearing all the spoils of the East to Northern courts.

What cities and towns scarcely more populous than one of our wards could do



KLAAS KLEES OF MARKEN

five centuries ago for commerce and for adornment surely rich American cities could do today. It is perhaps too much to demand of a utilitarian people that the water given so plentifully to their hand shall be used solely for decoration. To him who recalls the tinkling and rippling of waters in French and Italian gardens, the refreshing coolness they brought at hot noondays, who remembers longingly

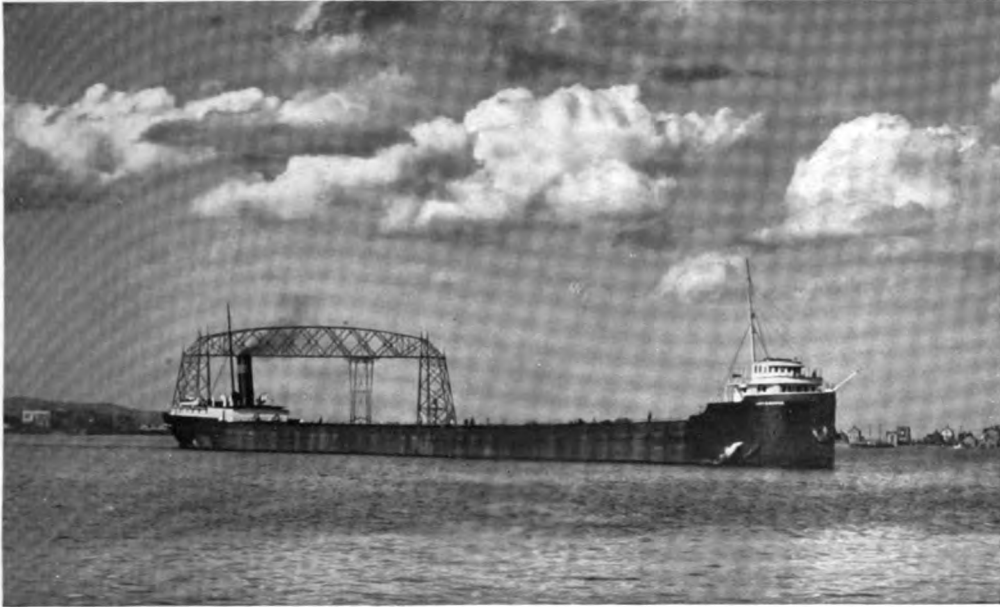
on a sultry summer day in his own arid town—arid as a desert—although it lies between two great rivers—the fountains of Paris and Rome, the beauty does not seem that of uselessness, the expenditure an extravagance. Still less extravagant would seem that investment of money which should make of our rivers and canals what Europe has made hers, things of beauty as well as of service, the promenade upon their banks a pleasure place for the people, their smooth waters a roadway from town to town, from field or factory to market.



THE FOUNTAIN OF TREVI, ROME

"TO HIM WHO REMEMBERS LONGINGLY OF A SULTRY SUMMER DAY THE FOUNTAINS OF PARIS AND ROME THE BEAUTY DOES NOT SEEM THAT OF USELESSNESS"

THE HANDLING OF IRON ORE ON THE GREAT LAKES



STEAMSHIP LADEN WITH IRON ORE LEAVING DULUTH, MINN., AT THE HEAD OF LAKE SUPERIOR, FOR THE LOWER LAKES. NOTE THE AERIAL FERRY BRIDGE WHICH SPANS THE SHIP CANAL, IN THE BACKGROUND

SIX of every seven of the 84,628,657 net tons of domestic freight shipped in 1910 from American ports on the Great Lakes were handled in bulk cargoes. More than half, 46,500,000 net tons, was iron ore, 22,600,000 tons were coal and over 3,000,000 tons were grain.

With such an enormous traffic to be served it is, perhaps, not to be wondered at that inventive genius has been busy; that highly specialized types of ships, docks and appliances for loading and unloading bulk cargoes have been evolved; and that such cargoes are handled in less time and at less cost in the harbors of the Great Lakes than in any other ports in the world.

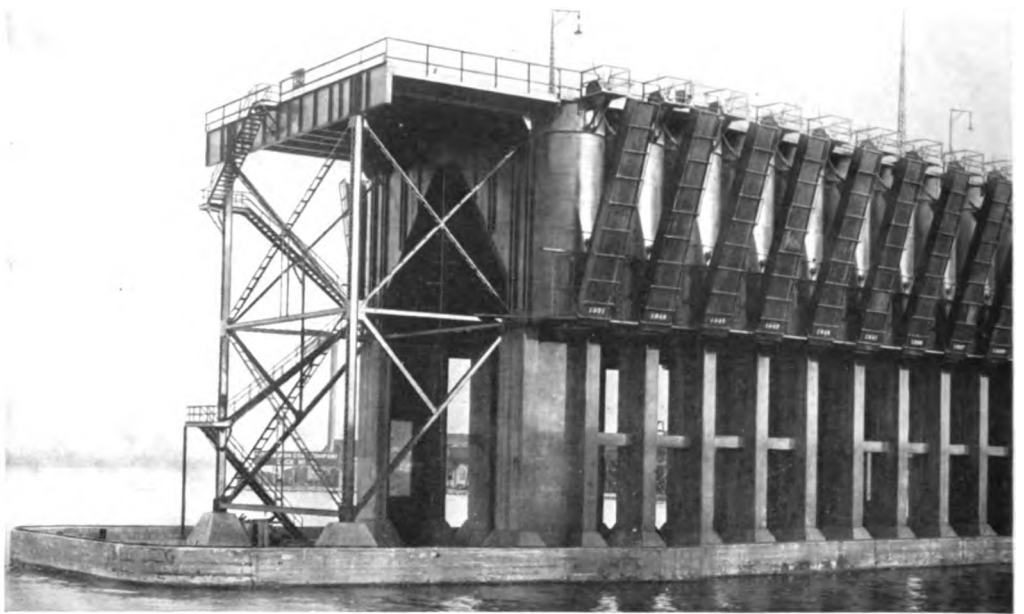
In 1855, when the Soo Canal was first opened, 1449 tons of iron ore were shipped from Lake Superior. Many men and many days were occupied in loading this ore into the little schooners which carried it to Cleveland, and the unloading took longer still. The freight paid was \$3.00

per ton. In 1912 the total shipments from the Lake Superior region will probably be 45,000,000 tons—and most of it will be carried at a freight rate of 40 cents per ton.

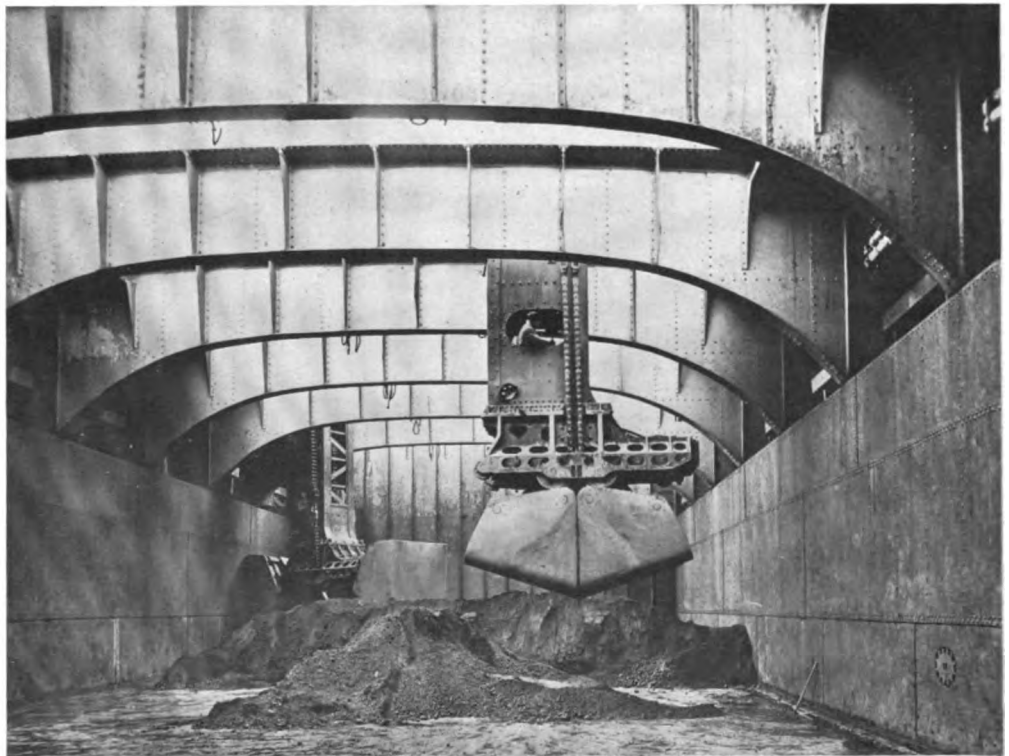
Methods of loading and unloading have changed even more than rates of freight. The modern ore dock is a huge structure, generally of timber, although the very latest type is made of concrete and steel. These docks rise 75 or 80 feet above the water and some of them are nearly half a mile in length.

The ore is hauled to the dock in hopper-bottomed cars and dropped into storage bins, or "pockets" as they are usually called. When the ship comes alongside the dock the chutes are let down, the slides drawn up, and the ore goes rushing into the hold at the rate of hundreds of tons a minute, while the great ship sinks swiftly down into the water as she gets her load.

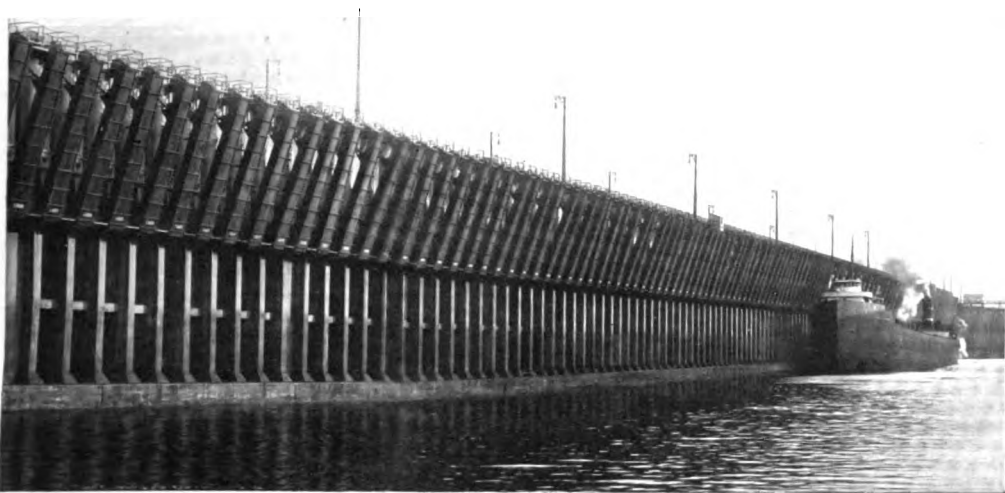
Great Northern Dock No. 4, shown in the illustration, made the world's record



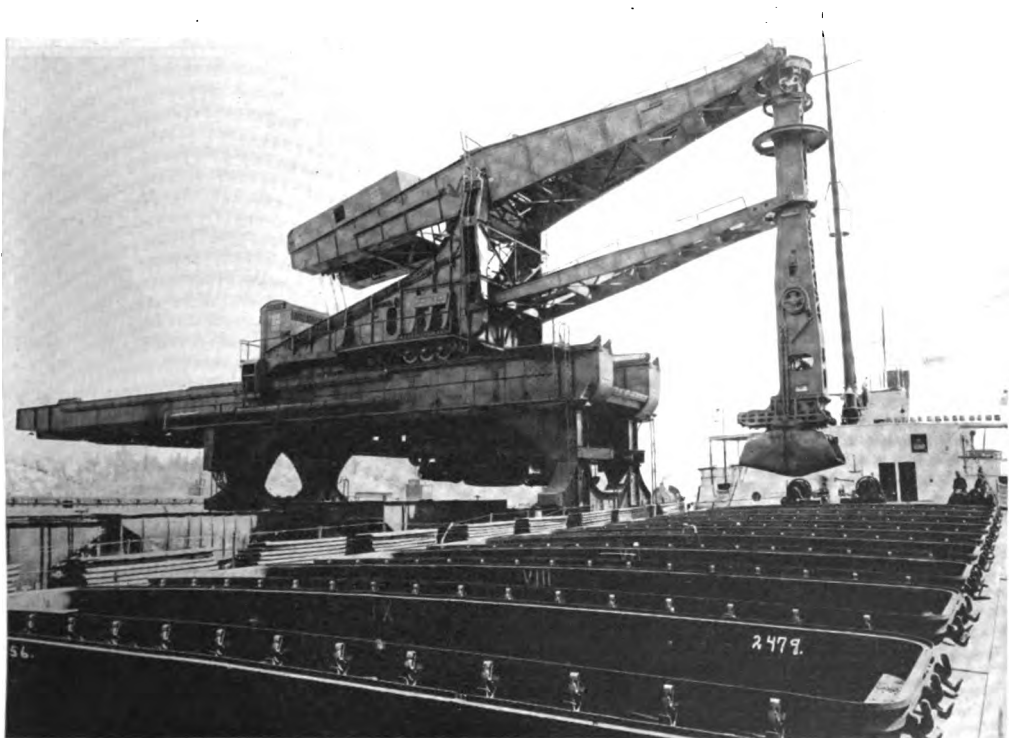
ONE OF THE GREAT NORTHERN ORE DOCKS AT ALLOUEZ BAY, SUPERIOR, WIS. THE MODERN ORE DOCK BOTH SIDES OF THE DOCK CAN BE USED AT ONCE. THE



A HULETT UNLOADER WITH ITS JAWS ABOUT TO OPEN FOR A 12-TON BITE OF IRON ORE. THE OPERATOR GOES WITH HIS MACHINE INTO THE HOLD OF THE SHIP FOR A LOAD



IS A GREAT STRUCTURE OF CONCRETE AND STEEL, RISING MORE THAN 75 FEET ABOVE THE WATER. VESSEL LYING ALONGSIDE IS NEARLY 600 FEET IN LENGTH



VESSEL IN HARBOR OF CONNEAUT, OHIO, LYING AT DOCK WHICH HAS MADE THE WORLD'S RECORD FOR UNLOADING OF IRON ORE—10,636 GROSS, OR 11,912 NET, TONS IN TWO HOURS AND FIFTY MINUTES



GENERAL VIEW IN THE HARBOR OF ASHTABULA, OHIO. IN 1910 THERE WERE RECEIVED IN THIS HARBOR 9,620,638 GROSS, OR 10,775,114 NET, TONS OF IRON ORE

for loading on September 8, 1911, when 9,457 gross (10,592 net) tons of ore were put into the steamer *W. E. Corey* in twenty-five minutes. While special preparations were made in this case for the edification of a party of U. S. Steel Corporation officers, it shows what can be done.

Ships have changed as much, or more, than docks and freight rates, for instead of a few little wooden schooners there is a great fleet of huge steel steamers. The largest of the lot, the *Col. J. M. Schoonmaker* and the *Wm. P. Snyder, Jr.*, are each 617 feet long, 64 feet wide and have a capacity of 14,000 tons. They are said to be the largest bulk freighters in the world.

Ashtabula and Conneaut, Ohio, receive more iron ore than any other ports on the Lakes, and it is nip and tuck as to which gets the most. In 1911 Conneaut got 6,931,278 tons and Ashtabula 6,359,131. Up to October first of this year, Conneaut had received 6,209,000 tons and Ashtabula 6,100,582.

Both towns claim to do some lively unloading, too. Ashtabula tells of the day when the steamer *Shenango* reached port at 3 A. M. with 11,000 gross (12,320 net)

tons of ore in her hold, had it taken out, was shifted to another dock, and left port at 9 o'clock the same evening, carrying 12,000 tons of coal.

Then Conneaut speaks up and declares that she holds the world's record for rapid unloading and proceeds to give the details. On August 8, 1912, the steamer *P. A. B. Widener* came alongside the dock with 10,636 gross (11,912 net) tons of ore in her hold. Two hours and fifty minutes later every ton of it had been taken out and put into cars for shipment to Pittsburgh furnaces.

One of the illustrations shows a Hulett unloader just starting through a hatchway and another shows it down in the hold with its huge jaws about to open and take a bite of ore. One of these machines, electrically operated, took 2,093 net tons of ore out of the *Widener* on the occasion named. That means that the huge machine reached out over the ship, dived down into the hold, grabbed twelve tons of ore, lifted it out, backed up, and dropped its load into a waiting freight car once every minute for two hours and fifty minutes without a stop.

And that's how they handle iron ore on the Great Lakes.

THE ATLANTIC COASTAL PROJECT

By JOSEPH HAMPTON MOORE, M. C.

CONGRESSMAN MOORE belongs to the rather exclusive order of "doers of things" rather than to the more numerous society of "dreamers of things." He has been President of the Atlantic Deeper Waterways Association since 1907, and is a Director of the National Rivers and Harbors Congress. In this article Mr. Moore draws the conclusion that, both from the dollars and cents standpoint and considerations of humanity, there should be an inland waterway the whole length of the Atlantic Coast.

THE Atlantic Deeper Waterways Association contemplates a continuous line of inland waterways along the Atlantic Coast, from New England to Florida. Along this whole 1800 miles of coast are bays, sounds, ponds and rivers, sheltered from the sea and awaiting only the pick and the shovel to connect them up into one great course from Canada to the Gulf. But because we have not applied the pick and the shovel, but for at least two hundred years have "discussed" the building of such an intra-coastal watercourse, we have lost more in life and property than the Government has spent all told in harbor improvements upon the Atlantic side of our wonderful country.



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lives and property may be reduced to the minimum and the marine graveyards become but a memory to those "who follow the sea in ships"?

Commencing with the channel across Cape Cod (a cut of eight miles), boats, coursing through beautiful hill land, will be saved the risk and danger and possible loss resultant from a course of 148 miles from Boston south around Cape Cod. Then it is proposed to build

a canal from the lower end of Long Island Sound to the safe and ample waters of the Delaware.

A cut of 33 miles, across the State of New Jersey, for which that State will provide a right of way, will link up Boston and New York with Philadelphia and Baltimore and save an outside sailing distance from New York south, of 184 miles. Thus would be avoided the shoals of Barnegat. A cut of less than 14 miles across the peninsula of Maryland and Delaware will carry the waters of the Delaware River into Chesapeake Bay and save an outside sailing distance from Philadelphia to Baltimore of 325 miles. And a further improvement, to complete a 48-mile course from Norfolk south, will save an outside sailing distance of 90 miles and avoid the dangers of Cape Hatteras. In short, the improvement of existing canals, or such digging as may be necessary in solid cuts and dredging of about 100 miles, will save the outside risk and sailing distance of 740 miles and carry the products of the "rock-bound coast" of New England inland by water safe below Cape Hatteras.

Recent statistics prepared under the authority of the Atlantic Deeper Waterways Association relating to the whole Atlantic seaboard show that in the single decade between 1900 and 1910 there were over 5,700 disasters to vessels plying their trade along the Atlantic Coast. And what have been the losses resultant from those 5,700 disasters? In property value the loss was in excess of \$40,000,000. That wreckage was common loss, but there was a more serious loss. In addition to the \$40,000,000, more than 2200 lives were lost in those disasters. Most of those lives would have been spared if those vessels and that commerce had been able to take the inside passage rather than assume the risk of fog and storm in the open sea.

What then is this project? This linking up of the waters of the Puritan with that of the Cavalier, to the end that the loss of



THE WRECK OF THE *TORONTO*
(OFF CAPE COD)

During the decade ended with 1910 there were 5,700 disasters to vessels along the Atlantic Coast, involving a loss of \$40,000,000 and the sacrifice of over 2200 lives. Those lives would have been saved if those vessels and that commerce had been able to take the proposed inside passage, instead of assuming the risk of fog and storm in the open sea.

The Hudson River, too, is one of the arms of the Atlantic project which, with the completion of the enlarged Erie Canal, must hold the key to the trade of Canada and the Great Lakes.

It may be a long time before the peninsula of Florida is canalized and a thousand miles, approximately, saved to vessels doing business with Gulf ports, but that vast project is contemplated by our Southern friends as a continuing link of the Atlantic project, to the end that the inland waters along the Gulf, from the Atlantic to the Mississippi, may be brought together into

one common scheme of inland water passage.

The feasibility of an intra-coastal canal from New England to Florida is admitted by the U. S. Army Engineers, and its desirability is known to every business man who has recourse to the sea for his transportation between New England and ports of the South.

So important and extensive in its ramifications is this project of building an inland waterway between New England and Florida, that it seems imperatively necessary that I touch upon one or two questions intimately related with the subject.

East of the Appalachian chain we have now a population of 37,000,000, which is more than one-third of the total population. In that area we have only 23 per cent. of the railroad mileage of the United States. With our waterways neglected and bottled up, we are compelled to do more business with fewer railroads than any other section of the country. We must have more railroads or more waterways, or both. That the Govern-

ment does not give us consideration in proportion to our population and commerce is shown in the appropriations made for rivers and harbors. Up until 1907, we received approximately \$141,000,000, or about one-quarter of the total appropriations made by the Government to that time. Since 1907, and until the passage of the Rivers and Harbors bill of 1912, the apportionment of appropriations, according to an estimate of the National Rivers and Harbors Congress, was \$19,000,000 for the Pacific Coast, \$50,000,000 for the Atlantic Coast and \$110,000,000

for the Mississippi Valley. So that during the five years prior to 1912, while we advanced slightly in the matter of proportions, the Atlantic seaboard, with its great ports of Portland, Boston, Providence, New York, Philadelphia, Baltimore, Norfolk, Savannah and Jacksonville, received less than one-half the sum awarded the Middle West, the Lakes and the Gulf.

For our population of 37,000,000 the value of our manufactured products is \$11,000,000,000, and to this we should add a value of \$4,700,000,000, created by manufactures of products. Our exports aggregate \$1,000,000,000 and our imports \$1,200,000,000. I do not claim the exports and imports so enormously developed as exclusively belonging to the Atlantic seaboard, but I think it will not be controverted that while they may arise in all parts of the country, or in all parts of the world, they concentrate along the Atlantic seaboard and present to us the tremendous problem of transportation and shipment, which must necessarily be acute at approaches to ports of entry.

And in this particular I lay special emphasis upon the fact that while along the

Atlantic Coast we have only 36 per cent. of the water-borne domestic freight of the country, we do all our great business in the old Colonial area, with all sections of the country and all parts of the world, upon only 23 per cent. (or less than one-quarter) of the total railroad mileage of the United States, which in itself would seem to warrant the speedy building of the links, which give abundant promise to make a mighty chain of inland waterways from Maine to the Florida Keys.

Humanity, as well as commerce, demands that this intra-coastal waterway be constructed with despatch and we are hopefully looking forward to the appropriation by Congress of a sum sufficient to purchase the canal between the Delaware River and Chesapeake Bay as the third link in the connected chain, the "Beaufort Cut" having been completed and the Rivers and Harbors Act of 1912 having provided for the taking over and improvement of the Chesapeake and Albemarle Canal in accordance with the recommendations of the engineers and in harmony with the whole coastal project.

We complain of the decadence of the



PORT OF PHILADELPHIA

STEAMER LADEN WITH IRON ORE, INWARD BOUND



ON THE INLAND WATERWAY NEAR BEAUFORT, N. C.

American merchant marine; we know that the sailing craft is disappearing from the high seas; we are fully conscious of the absorption of the ocean-going trade by the *Titanics* and the *Mauretianas*, of foreign ownership; we realize that more than 90 per cent. of the business of the United States is home business, and that our railroads, while superior to those of Europe, are limited in their carrying capacity and crowded with business, with prospects of more to come, and yet, for the lack of

appropriations, or our indifference to securing them, we are compelled to listen to the constantly recurring recital of death and disaster, which ought to have been avoided.

The Association which I have the honor to represent cannot afford to be silent upon this question, nor will it be, so long as other sections of the country, not blessed with the industry or the commerce of the Atlantic Coast, are permitted to take away the common revenue for insignificant rivers and ports of less importance. It is not sufficient that we have been robbed of our merchant marine, or that our sailing craft are being pushed into oblivion, or that our coastwise steamers are submitted to unnecessary risk and delays. "The old order changeth," and as the sailing craft have gone and the coastwise steamer has been absorbed, the burden-carrying barge and the swift-moving motorboat have come into our commercial life, and are now also demanding those safe and sheltered waterways which God evidently intended should be opened up for the use of man along the Atlantic Coast.

SPEEDY MOTOR CRAFT
REGATTARED BANK, NEW JERSEY
1912

Courtesy
"Motor Boating"

Wherever the motor boat is offered a safe passage-way, land values boom, for through this means of quick transit the city is within easy reach of the home down by the shore or over by the river. The proposed Atlantic intracoastal waterway would be ideal for the speed boat and cruiser.

THE PANAMA-PACIFIC EXPOSITION

By JULIUS KAHN, M. C.

THE great international Panama Exposition, to be held at San Francisco in 1915, will soon occupy the center of the stage, and no one is better fitted to tell of the plans for this wonderfully dramatic event than Julius Kahn, who enjoys the unusual distinction of having made a splendid reputation as a wearer of the "sock and buskin" before entering politics. He is a brilliant speaker and writer, and this article will grip your imagination from the start.

THROUGHOUT the Pacific Coast our people are looking forward to the opening of the Panama Canal as they have looked forward toward no other event. To each one the opening of the canal has an intense and almost personal significance. It makes possible the ultimate attainment of every ideal which is held for the future of the magnificent empire upon the western shores of America.

So it is that the communities of the Pacific Coast are preparing for the advent of the Panama-Pacific International Exposition and of all the completion of the canal will bring, with an enthusiasm which is marked by an individual and personal note, as well as by the natural feeling of patriotism which each good American must experience at the contemplation of the stupendous work which our Government has accomplished.

"The Panama Canal is the world's Golden Gate to the Pacific," said Secretary Knox in San Francisco upon his

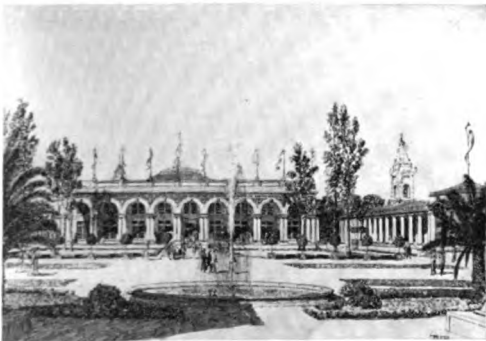


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return from the Caribbean Sea. The Panama-Pacific Exposition will express every hope that the West feels at Panama. With the canal completed, America will have a practically continuous coast line from Maine, upon the Atlantic seaboard, to the Golden Gate and Puget Sound upon the Pacific. For the first time, the Pacific coast of South and Central America, of Mexico, and of North America will be opened by

direct route to the European nations. At present there is but one line of steamers that regularly reaches the Pacific coast of South America from Europe via Cape Horn, and but a single line runs between the Orient and South America across the Pacific.

In this connection I am speaking of established routes. But all this will be changed. The Pacific Coast will be placed upon the highway of the world's travel. Steamers will, if they travel from Panama to the Orient by the Great Circle, the shortest route, pass within one hundred



SERVICE BUILDING—THE FIRST TO BE ERECTED



FESTIVAL HALL, DESIGNED BY FARQUHAR



GENERAL VIEW OF SITE OF PANAMA-PACIFIC EXPOSITION

and sixty miles of the Golden Gate. To the average mind, accustomed to seeing a printed map, a flat map of the world drawn to scale, showing the Great Circle, will illustrate this point. The rotundity of the globe makes traveling upon the Great Circle the shortest distance between two points, although upon an ordinary map it will seem the longer distance. A steamer from Colon to Yokohama would almost parallel the coast of California and none would be but a few miles off the coast.

Up and down the entire Pacific seaboard millions are being expended upon wharves, terminals and short inland lines to serve as feeders to ocean traffic. Cargoes from the Mississippi, Missouri and Ohio River valleys may go by water freightage to the Orient, and the opening of the canal has an immediate and direct interest to the producers of great interior sections of the country who will be enabled to send their goods cheaply throughout the world on the new route of world's traffic. The rivers that lead to the ocean become like smaller streets that lead to the great main highway.

The world commerce that will result when a goodly part of the total carrying trade of the world is saved thousands of miles of sea voyage is almost beyond conjecture. A thousand commercial avenues will be opened to producers who have never met, and the Panama-Pacific International Exposition will afford the meeting place for those who plan to take advantage of the new world's markets.

Not long ago the good old battleship "Oregon," drawing twenty-eight feet of water when under way, visited the city of

Portland, one hundred miles inland, but a seaport for all that. Whenever you find a city which can be visited by a battleship drawing twenty-eight feet of water, you will be very safe in calling it a seaport. The port of Portland maintains a floating dry-dock of ten thousand tons capacity; operates two hydraulic dredgers on the river and has another dredger nearly completed. The Government has spent nine million dollars on the Columbia bar and has just appropriated one million dollars more. It is aimed to have a thirty-foot channel at low tide from Portland to the sea.

Seattle, in preparation for the opening of the canal and for the increased trade which it must care for, is preparing upon a stupendous scale for the building of wharves and terminals, for canals and all that will make that city a great port. More than twenty million dollars, in the opinion of Gen. H. M. Chittenden, will be expended by Seattle in the next five years for harbor improvements. One of the striking features of Seattle's work is the project to connect the salt waters of the Sound with the fresh waters of Lake Union, lying within the city, and the beautiful Lake Washington on one of the city's boundaries.

A canal is being built to connect Lake Washington and Lake Union, lowering the former eight to ten feet to the level of the latter. Another canal will connect Lake Union with the salt waters of Salmon Bay. To force Salmon Bay to the level of Lake Union the Government is now building the second largest lock in this country. This will permit the fresh and salt waters to meet in a great ship-canal floating the



SHOWING FRONTAGE ON SAN FRANCISCO BAY

great liners of the sea and giving them a fresh water anchorage if they so desire.

San Francisco is now the subject of an appropriation of nine million dollars by the State of California for the improvement of its harbor terminal facilities. Concrete wharves and docks are being built through this appropriation, and millions of dollars will be expended by the great steamship syndicates that now make San Francisco one end of their route. The agents of more than twenty syndicates, embracing the notable steamship transportation lines of Europe, have already visited San Francisco, looking toward the establishment of future routes between San Francisco and Europe via the Panama Canal, so that a number of new lines to the metropolis of the Pacific is assured.

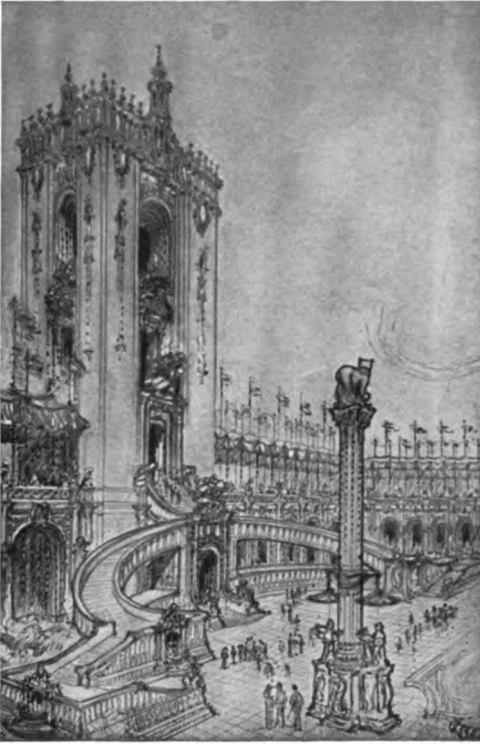
The existing lines between San Francisco and the Orient are planning to improve their freight and passenger carrying facilities. Not only will San Francisco and other Pacific Coast cities profit by increased direct commerce, but they will become ports of trans-shipment. None of the European lines, so far as I have been able to ascertain, contemplates running from Europe to the Orient via Panama, although it is possible that a number may do so. The trip will be too long. The natural line of travel will be from Europe to the Pacific Coast ports via the canal, and from Atlantic Coast ports to the Orient via the canal. There will also be a direct line between Atlantic and Pacific Coast ports via the canal. This will, it will be seen, make the Pacific Coast in large measure the natural point of trans-shipment for cargoes to the Orient from Europe via Panama.

San Diego is undertaking a wonderful dock and waterfront system and planning the expenditure of many millions. Los Angeles, always enterprising, will care for a goodly trade through Panama. Victoria and other Canadian ports are alive to their opportunities, and Victoria has adopted the slogan "The Liverpool of the Pacific."

Thus the cities of the Pacific Coast are betraying a vital interest in the Panama-Pacific International Exposition, at which the people of California, as trustees for the nation, will provide the local setting for the celebration to commemorate America's work and to point out the way for future relationships.

Progress upon the Panama-Pacific International Exposition is far advanced. The scope of the exposition has been determined and the plans of a commission comprised of many of the foremost architects of the United States have been definitely accepted. Construction work on the first great exhibit palace, that of machinery, will begin on or before November 11th of this year, and from then on contracts will be let at the rate of two a month for each of the fourteen great exhibit palaces of the main group to be devoted to general exhibits. Within nine months construction will be under way upon all of the main exhibit buildings, and they will be completed on or before June 25, 1914. This will permit the decoration and adornment of the grounds and buildings with flowering trees and shrubs and with flowers.

The Panama-Pacific International Exposition will be the first of the great world's expositions to swing its gates open upon time on a completed spectacle.



THE TOWER OF THE EAST COURT

from the stairway approach from the sunken gardens. Its balconies will accommodate thousands of spectators and its chimes will surpass those of Westminster Abbey. The main tower with its colossal twin staircases is at the north side of the Festival Court facing the sun. It is a suggestion of Oriental architecture. Designed by Mulgart.

The site of the exposition lies for more than two miles along the shores of San Francisco Bay and is midway between the Ferry building, the principal entrance to the city, and the Golden Gate. The site is close to the most populous portion of San Francisco. From the foot of Van Ness Avenue, two miles west of the Ferry building, the site extends for fifteen thousand feet, almost to Fort Point, upon the Presidio military reservation. As a whole the site, in crescent form, presents the effect of a vast amphitheatre, with the tenanted hills of San Francisco and the forested slopes of the Presidio military reservation as its encircling walls. From the hills of the city, people will be able to look down upon the exposition as it is building. Thousands of men will soon be at work.

The exposition buildings will be the loftiest and most impressive ever con-

structed. From San Francisco Bay, in 1915, the visitor will see three great main groups of exposition palaces rising against the amphitheatre of the hills. There will be the great central group, comprising the eight exposition buildings to be devoted to general exhibits, their northern walls facing upon the Marina or esplanade by the harbor's edge for three thousand feet and rising sixty-five feet in height.

There will be the great left-hand group, nearest the Ferry building, composed of the concessions and amusements and occupying sixty-five acres, and there will be the right-hand group lying next to the Golden Gate on the west composed of the exhibits and buildings of the states nearest the water, with the pavilions of the foreign governments rising tier upon tier in terraces in the background.

The great central group, with the adjoining Palace of Fine Arts on the west and the Palace of Machinery upon the east, will extend four-fifths of a mile east and west. Its towers, exclusive of the main tower in the Court of Honor, will rise one hundred and thirty to one hundred and seventy-five feet in height. The domes in the center of the exhibit palaces will tower one hundred and forty-four feet.

From the bay the sky line of the exhibit palaces, apart from their domes and towers and minarets, will be ninety-six feet in height, or thirty-one feet higher than the imposing walls that face the splendid esplanade along the harbor's edge.

From afar the central group, the main exhibit palaces, facing three thousand feet upon San Francisco harbor, will present the effect of an almost solid massing of palatial structures. Nearer at hand it will be found that the buildings are interspersed with great open courts extending from the tropical garden upon the south, nearest the hills of the city, to the esplanade along the harbor's edge upon the north.

Three great courts will run north and south through the main group of buildings. There will be the great central court, or the grand Court of Honor, designed by McKim, Mead & White of New York, and six hundred by nine hundred feet in its dimensions; there will be the great



FRONT ELEVATION OF THE FINE ARTS BUILDING, DESIGNED BY MAYBECK

Oriental or East Court dedicated to the arts, and there will be the great West Court or Court of Four Seasons. In the center of the main group will rise the huge tower of the Administration Building, three hundred and seventy feet high and flanked on either side by the gilded domes, towers and minarets of the remaining buildings of the group. At the base of the tower, which will occupy an acre in extent, will be a huge arcade beneath which the visitor may enter from the Southern garden into the grand Court of Honor. In its center the court will contain a sunken garden, and at the entrance to the Court of Honor, between the Agricultural and Transportation Buildings, will lie a pool

of water upon whose surface the great tower will be reflected.

The grouping of huge buildings will give the effect of almost inconceivable massiveness and grandeur. A decorative and color scheme, totally unlike that ever employed in any exposition in history, will produce an artistic effect never surpassed. Each court will be under the direction of a single architect or group of architects, and each will thus give out the finest conception of the architect. Yet in their entirety the courts, like inner rooms of a great palace, will not clash nor produce a lack of harmony in the architectural effect.

The Panama-Pacific International Exposition will express in its architecture and conception the spirit of progress and achievement which has found amplification in the construction of the Panama Canal, the American wonder-work which has gripped the interest of the nations of the world, who will participate in the exposition upon a splendid scale. But above and beyond all material features is the spirit which the exposition typifies—the spirit of achievement, of progress and of education.



SECTION OF THE COURT OF SEASONS, DESIGNED BY BACON

THE MIGHTY RIVER OF THE WEST

By J. N. TEAL

MR. TEAL, who is a prominent attorney of Portland, Oregon, represents before the Nation the interests of the Pacific Northwest in many capacities, and stands preeminently high as an advocate of waterway development. His special interest is, of course, in his own section and he writes with a knowledge born of close association with the Columbia River and the wonderful valley it drains. He also talks interestingly of Willamette and Snake Rivers.

THE Columbia River, the second largest river in the United States, forms the boundary line for a considerable distance of the States of Oregon and Washington. It has a length of about 1200 miles and a drainage area of 250,000 square miles.

The Willamette River enters the Columbia River 102 miles from the sea and the Snake River 328 miles from the sea. The Columbia and Snake Rivers, with their tributaries, drain the great Inland Empire, from British Columbia on the north, and the Rocky Mountains on the east. The Willamette River drains the valley lying between the Coast Range and Cascade Mountains in western Oregon.

The Columbia River is not only one of the chief harbors of the coast, but is a waterway important to the States of Oregon, Washington and Idaho, and to a considerable portion of southwestern British Columbia. The total navigable waters of the Columbia River and its tributaries aggregate 2136 miles.

The region drained by the Columbia River and its tributaries includes the rich and productive sections of the States of Oregon, Washington and Idaho, lying east of the Cascade Mountains. It is now producing about 90,000,000 bushels of wheat and other cereals per annum, thousands of car-loads of fruit, hay and vegetables, live stock, precious metals, in fact, natural products of all kinds. Yet its development is but in its infancy.

This great river and its tributaries should be the burden bearer of the products of this vast empire. It should not only control rates, but be an instrument



in constant use in the actual work of transportation. While improved to but a limited extent, its use has had a profound effect on freight rates.

Before the completion of the canal and locks at the Cascades of the Columbia, the freight rate on sugar, Portland to The Dalles, was \$6.20 per ton; now it is \$1.90 per ton. Rates on other commodities were affected in a like degree.

This is of course a much greater difference than would ordinarily result from unobstructed water transportation, but of its effect on rates generally when used, there can be no doubt.

Notwithstanding the difficulties of operation by reason of transfers, etc., on the upper Columbia, the Open River Transportation Company has for a number of years been operated as an independent boat line running steamboats between Portland and Lewiston on Snake River and Priest Rapids in the Columbia. Through the operation of this line (notwithstanding the very adverse conditions) not only important rate reductions have been secured but improved rail service as well. Last year nearly 2,000,000 pounds of wool was transported by this line from points as far up the river as Lewiston and even above that point to Portland and thence by sea to Boston at much lower rates than the rates by rail.

The grandeur of the Columbia River and its awe-inspiring scenery has been the inspiration of the poet and descriptive writer. The fertility of the country drained by it would fill volumes, but its use as a transportation agency has been largely overlooked by the writers in their admiration of its charms and beauty. The

great river itself, the snowclad mountain peaks, the wild Gorge of the Columbia, the waterfalls dashing from mountain heights, the stately palisades, the great forests, so impress one, the practical side is apt to be overlooked.

The rivers of the West are in constant use and, properly improved, will be of inestimable public benefit. Even now, and as has been the case for years, steamboats ply the waters of the Columbia and Willamette in every direction and this fleet handles in the aggregate an enormous tonnage. Between Portland and the sea

there is a constant procession of deep sea ships flying the flag of every nation. Portland is the largest lumber and wheat shipping port in the United States. It has commercial relations with every nation under the sun. The coast tonnage, to and from Portland, is very great, and its people appreciate the importance of the use of water as a transportation agency. Portland has spent millions of dollars, raised by taxation, in the work of improving the river between that city and the sea, and this work is in constant progress. It maintains a dry dock, pilotage and towage service both at the mouth of and on the river from Portland to Astoria by the sea. It is also constructing and establishing a municipal dock and terminal system of the most modern type. The Columbia River might be said to be one great harbor through which a great part of the tonnage of the Inland Empire will naturally flow, on or along the water grades from far-away British Columbia, on its way to the markets of the world.

In this work of distribution—of such vital interest to the producers of the



THE COLUMBIA RIVER JETTY

THIS MIGHTY STREAM OF THE PACIFIC NORTHWEST IS THE SECOND LARGEST OF OUR RIVERS. IT IS 1200 MILES LONG AND HAS A DRAINAGE AREA OF OVER 250,000 SQUARE MILES

Northwest—the mighty river of the West, the Columbia of song and story, will necessarily play a momentous part. The following is a brief statement of improvements now in progress on the Columbia River and its tributaries.

In April, 1885, the construction of a jetty on the south side of the entrance to the Columbia River began. The south jetty is now practically completed and the low water channel depth has increased from 21 to 28 feet. Plans have been approved for the construction of a jetty on the north side of river entrance, which will create a depth of 40 feet at mean low tide.

On the Oregon shore of the Columbia, about 14 miles from the sea, is situated the historic city of Astoria, of 15,000 population and one of the oldest cities on the coast. Astoria has a fine harbor and is making plans for extensive waterfront improvements.

From the mouth of the Columbia to the Willamette River, a distance of 102 miles, the river is wide and deep, with only a few shoals. Vessels drawing 28 feet of water have no difficulty in reaching Portland

even at low-water stages. Ocean navigation turns into the Willamette River to reach Portland, Oregon, which is situated on the Willamette River about 12 miles above its mouth, and occupies both banks. The work of improvement of the Columbia and Willamette Rivers below Portland has been done partly by the United States and partly by local interests working under a corporation known as the Port of Portland and on funds secured by taxation of property situated within the limits of the port.

Above Portland the Willamette River, which drains the rich valley of the same name, is navigable for light-draft river boats for a distance of about 120 miles. At Oregon City, about 16 miles above Portland, are the Willamette Falls. This obstruction is overcome by locks. Throughout the Willamette Valley are a number of thriving cities, including Salem, the capital of the State.

Continuing up the Columbia River from the mouth of the Willamette, the river is navigable for ocean-going vessels to Vancouver, Washington, a city of 10,000 inhabitants, on the north bank of the Columbia River about 106 miles from the sea.

Above Vancouver the river is navigable for river steamers to Cascade Locks, a

distance of 140 miles from the sea. At this point the river is obstructed by the Cascades of the Columbia. The obstruction is overcome by a short canal with two locks. Above the Cascades for nearly 50 miles the river has a small fall and little current. River steamers with a draft of 8 feet can navigate this pool at the lowest stage to the foot of The Dalles Rapids, to the City of The Dalles with a population of about 5,000, 196 miles from the sea. Here for a distance of about 12 miles the river is not navigable on account of rapids and falls. A canal $8\frac{1}{2}$ miles in length is being constructed by the United States along the Oregon shore. Above the Celilo Falls the river for a distance of several hundred miles has a navigable low-water depth of about 4 feet. The only improvement in progress is that of removing the most dangerous rocks in the channels.

Navigation above Celilo Falls is now limited to the stretch below Priest Rapids, on the Columbia, a distance of about 170 miles, and to Lewiston on the Snake River. From Priest Rapids to the headwaters of the Columbia in British Columbia, there are long navigable stretches separated by rapids. Some of the rapids are navigable at favorable stages and at a few rapids locks will be required. Steps are being taken both in the United States and British Columbia, looking to the cooperation of local interests with the Government of the United States in a plan for the improvement of the river from its headwaters in British Columbia to the Pacific Ocean.

The Snake River enters the Columbia 314 miles above the sea, and is now navigable to the City of Lewiston, Idaho, situated in the center of a rich farming section, a distance of about 165 miles above its mouth. The proper improvement of these rivers taken in connection with power development and irrigation possibilities will make this entire section one of the most attractive and productive territories in the United States.



THE GRANDUR OF THE COLUMBIA RIVER SCENERY IS UNSURPASSED



IMMINGHAM DOCKS CELEBRATION

Scene at the recent opening of England's splendid new port by the King and Queen. The picture shows Their Majesties approaching the dais erected in their honor. The smaller pictures are a group of a few of the tremendous two-ton cranes that form part of the facilities of this wonderful port, and the battery of nine immense boilers, each operating under a pressure of 180 pounds necessary for power.

© Paul Thompson, N. Y.

NATIONAL RIVERS AND HARBORS CONGRESS

By JOSEPH EUGENE RANSELL, LL. D.

SENATOR-ELECT RANSELL, who enters the upper branch of Congress March 4, 1913, having lived on the Father of Waters from early manhood, has taken the liveliest possible interest in the development of every worthy waterway project. Mr. Ransdell has been a forceful figure in public life since his election to the House in 1899, and is a member of the Committee on Rivers and Harbors. Mr. Ransdell tells of the origin and growth of the National Rivers and Harbors Congress, but he fails to tell how much of the power and influence of that association is due to the energy, devotion and genius for organization of the man who has been its president since 1906.

ON March 3 and 4, 1901, the late Senator Thomas H. Carter, of Montana, talked to death a Rivers and Harbors Bill which carried appropriations for waterways aggregating fifty-six millions. His professed excuse was that the House conferees refused to agree to a Senate amendment appropriating sundry sums for irrigating lands in arid sections of Montana where, as Chairman Burton expressed it, "there were no streams deep enough to float a birch-bark canoe." Rumor gave other reasons for the defeat of this bill, but at any rate it was killed and a grievous blow struck at river and harbor legislation. Then the friends of the cause throughout the land began to rally and unite their forces.

One of the most important projects in the defunct bill was for a channel of 35 feet through the South West Pass of the Mississippi River, and its special advocates before the committees of Congress were M. J. Sanders and John W. Bryant of New Orleans. These two gentlemen felt their defeat very keenly, and immediately laid plans for arousing public indignation against Senator Carter's action and sentiment in favor of a liberal bill next session.

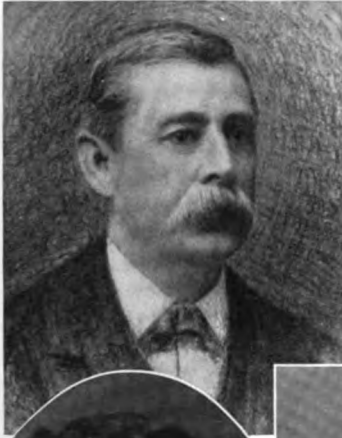
The result of their efforts was a great waterways convention which opened in Baltimore, Md., on October 8, 1901. Mr. Geo. E. Bartol of Philadelphia was made permanent president. Many delegates attended from various sections. The organization was christened *The National Rivers and Harbors Congress*. The utmost harmony prevailed. Resolutions denouncing the past policy of Congress towards waterways and insisting upon more liberal

treatment thereafter were passed unanimously. The press gave great prominence to the proceedings, and the whole Union was aroused as never before in fifty years in regard to waterways. An executive committee was appointed to carry on the work outlined in the convention and to perpetuate the organization, but it existed only in name, never held a meeting, and performed no functions for four years.

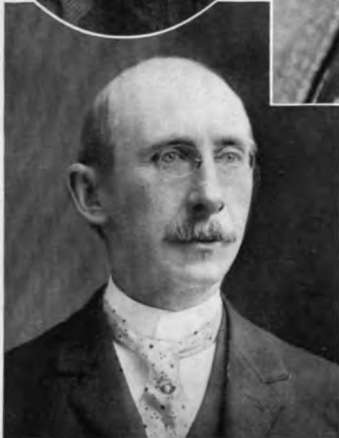
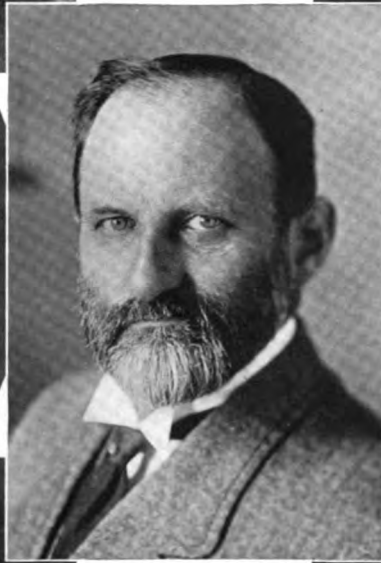
The good effects of the Baltimore convention were felt in the next session of Congress which, in the spring of 1902, passed a river and harbor bill carrying \$65,107,102—the largest ever enacted to that date—and waterway people were in high feather. Then came the depressing years 1903 and 1904 without any general legislation for waterways, and in 1905 a bill was passed appropriating only \$35,366,532—but little more than half that of 1902, although the nation was growing rapidly and demands for waterway improvements were increasing in proportion. The act of 1905 was a bitter disappointment, and the amounts it carried were totally inadequate to the country's needs.

In June, 1905, the Ohio Valley Improvement Association, under the lead of its great president, Col. John L. Vance, took the Rivers and Harbors Committee of the House of Representatives on a tour of the Ohio from Pittsburgh to Cairo to impress on them the importance of giving that river slack water navigation of nine feet from one end to the other, by means of locks and dams, at a cost of sixty-three millions. That was a glorious trip, a grand triumphal march of a thousand miles down the great stream, through

JOHN W. BRYANT
 PROMINENT IN THE EARLY HISTORY OF
 THE NAT'L R. & H. CONGRESS



M. J. SANDERS
 PROMINENT IN THE EARLY HISTORY OF
 THE NAT'L R. & H. CONGRESS



JOS. E. RANSELL
 U. S. SENATOR-ELECT
*President National
 Rivers and Harbors
 Congress since 1906*



GEORGE E. BARTOL
 FIRST PRESIDENT NATIONAL RIVERS AND
 HARBORS CONGRESS

HARVEY T. GOULDER
 SECOND PRESIDENT NATIONAL RIVERS AND
 HARBORS CONGRESS

The two ladies shown in this group are, to the right, Mrs. Hoyle Tomkies, first President,
 and, to the left, Mrs. A. Barton Miller, present head of the Woman's
 National Rivers and Harbors Congress

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 10 Peter Campbell
 11 R. W. Miller
 12 Geo. L. Whitford
 13 Geo. F. Washburn

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 15 M. I. Weller
 16 John C. Freeman
 17 D. U. Fletcher
 18 F. Horton Colcock
 19 Sigo Myers
 20 Goodrich Hatton
 21 T. S. Methvin
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23 Martin Behrman
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 26 K. L. Simpson
 27 Isidore Friedlander
 28 Jos. G. Medlenka
 29 J. S. Cullinan

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 31 W. P. Kennett
 32 Charles Scott

33 Thomas Wilkinson
 34 M. J. Roach
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37 James H. Davidson
 38 Edward H. Butler
 39 T. Edward Wilder
 40 Alexander McDougall
 41 H. I. Shepherd
 42 Luther W. Mott
 43 Perry A. Randall
 44 Wm. A. Meese
 45 A. G. Wells

OHIO VALLEY

46 Albert Bettinger
 47 W. B. Rodgers
 48 John L. Vance
 49 W. A. Johnson
 50 George Parsons
 51 Pinkney Varble
 52 M. C. Garber

TENNESSEE AND CUMBERLAND

53 M. T. Bryan
 54 J. A. Patten
 55 Geo. F. Milton

NORTH ATLANTIC

3 Olin J. Stephens
 4 George E. Bartol
 5 J. Hampton Moore
 6 William B. Jones
 7 John R. Sherwood
 8 Wm. T. Budd

ARKANSAS VALLEY

56 L. J. F. Rooney
 57 R. T. Daniel
 58 B. T. Hollenberg
 68 O. N. Killough

RIVERS AND HARBORS CONGRESS FOR 1912



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- 59 W. K. P. Wilson, *Alabama*
- 69 B. A. Fowler, *Arizona*
- 70 I. M. Worthington, *Arkansas*
- 71 A. C. Miller, *Iowa*
- 72 Harold F. McCormick, *Illinois*
- 73 R. C. Beach, *Idaho*
- 74 Nisbet Wingfield, *Georgia*
- 75 S. M. Sparkman, *Florida*
- 76 Edward H. Droop, *District of Columbia*
- 77 William H. Head, *Delaware*
- 78 Oliver Gildersleeve, *Connecticut*
- 79 Brooks Irione, *Colorado*
- 80 Chas. Von Behren, *Indiana*
- 81 Wm. D. Stephens, *California*
- 82 Walter S. Dickey, *Missouri*
- 83 E. F. Noel, *Mississippi*
- 84 Harry A. Tuttle, *Minnesota*
- 85 E. A. Stowe, *Michigan*
- 86 John J. Martin, *Massachusetts*
- 87 Dr. David H. Carroll, *Maryland*
- 88 Edwin C. Plummer, *Maine*
- 89 J. T. McClellan, *Louisiana*
- 90 Saunders Fowler, *Kentucky*
- 91 Henry Lassen, *Kansas*
- 92 John Bruegger, *North Dakota*
- 93 James H. Chadbourne, *North Carolina*
- 94 Herman A. Metz, *New York*
- 95 W. A. Fleming Jones, *New Mexico*
- 96 F. W. Donnelly, *New Jersey*
- 97 O. L. Frisbee, *New Hampshire*
- 98 Francis G. Newlands, *Nevada*
- 99 Henry T. Clarke, *Nebraska*
- 100 F. E. Stranahan, *Montana*
- 101 E. C. Camp, *Tennessee*
- 102 Chas. E. DeLand, *South Dakota*
- 103 John Gratke, *Oregon*
- 104 Olin Sawyer, *South Carolina*
- 105 Peter Goelet Gerry, *Rhode Island*
- 106 T. J. Keenan, *Pennsylvania*
- 107 G. F. Bucher, *Oklahoma*
- 108 Edwin C. Gibbs, *Ohio*
- 109 O. S. Marshall, *West Virginia*
- 110 Alexander Polson, *Washington*
- 111 R. A. Dobie, *Virginia*
- 112 W. S. Holman, *Texas*
- 113 F. W. Crandall, *Travelers' Protective Ass'n*
- 114 Chas. B. Griffith, *United Commercial Travelers of America*
- 115 Wm. Geo. Bruce, *Wisconsin*

PACIFIC COAST

- 60 W. D. Lyman
- 61 D. E. Skinner
- 62 Geo. C. Pardee
- 63 A. H. Devers

MISSOURI VALLEY

- 64 Harry L. George
- 65 W. B. Wait
- 66 I. P. Baker
- 67 Edgar C. Ellis

the most populous and wealthy valley of equal length in all the world. No warrior of ancient days returning from foreign conquest was ever accorded more hearty welcome, more distinguished honors and more lavish hospitality than Chairman Burton and the members of his committee on that historic voyage of the "Queen City" from Pittsburgh to Cairo. On all sides nothing was heard but "nine feet from Pittsburgh to Cairo." Thousands of school children in every city and village on the river greeted the committee with banners, music, and national airs.

The very birds sang "nine feet from Pittsburgh to Cairo;" the winds whistled it; the bands played it; the orators declaimed it; indeed, all nature in the great Ohio Valley, with its millions of souls and myriads of wealth, demanded nine feet of water at all stages from Pittsburgh to Cairo.

At Cincinnati a banquet was spread and many addresses graced the occasion. The writer, who was one of the speakers, suggested the wisdom of all friends of waterways uniting in a great national organization for promoting their cause, and urged the immediate formation of such a body. The idea took enthusiastically and was acted upon at once by the officers of the Ohio Valley Improvement Association. The visiting members of Congress held a meeting on the steamer next day, and gave their hearty approval. A conference of delegates from several waterway associations met shortly thereafter in Cincinnati, and it was decided to ask the executive committee appointed by the Baltimore convention to issue a call for a national waterways convention to be held in Washington the following January. That was done and a meeting of two hundred and fifty delegates, fairly representative of the nation, convened in the Arlington Hotel on January 15, 1906. It made up in enthusiasm what it lacked in numbers. A vigorous program was set on foot to arouse public opinion in favor of a liberal, comprehensive policy for improving every worthy watercourse in the Republic justified by the needs of commerce. No *waterway projects* were advocated, but a *genuine, business-like, waterway policy*. The total inadequacy of appropriations for rivers and harbors, which then averaged less than twenty millions a

year, was strongly emphasized, and Congress was urged to raise this sum to at least fifty millions a year. It was pointed out that river and harbor bills were enacted every third year, whereas the other great appropriation bills were passed every year, and a loud cry was made for *annual river and harbor bills*.

The slogan of the organization became: "A *policy, not a project—An annual Rivers and Harbors bill carrying fifty millions a year.*" And that slogan has been the pole star which ever guided and directed its efforts, and has kept it from breaking on the dangerous shoals of conflicting local interests.

Hon. Harvey T. Goulder of Cleveland, Ohio, was elected President of this convention and it was decided to retain the name adopted at Baltimore five years before. A strong executive committee was created, with plenary power to carry out the plans of the organization, and its efforts were untiring. The writer was made chairman of this committee and J. F. Ellison, of Cincinnati, its secretary-treasurer and active manager. Never was a wiser selection made than the latter. When Captain Ellison took the helm in January, 1906, the organization existed only in name; it had no exchequer; it had no contributing members; it had nothing but a good cause and some ringing resolutions. He went to work with great energy, assisted somewhat by the chairman, and soon found a helper worthy of himself in John A. Fox, who has proved a veritable St. Paul of waterways, preaching their gospel in every corner of the Union.

The next convention was held at the Arlington in December, 1906, and was a decided improvement on the last in numbers, enthusiasm and general force. It reiterated the policy of the previous meeting, and arranged to finance the association and carry on an aggressive campaign of education. The writer was made president and ex-officio chairman of the executive committee, which position he still holds. Ellison retained his position, and Fox became field director, which places they filled with increasing honor to themselves and the greatest benefit to the organization until they resigned recently to accept flattering business offers elsewhere.

No truer and more efficient friends of American waterways ever lived than

Frank Ellison and John Fox. The writer was associated intimately with them from the early days, when our souls were often sorely tried, and it is a great pleasure to pay this merited tribute to their worth.

Since December, 1906, conventions have been held every year in this city at the Willard Hotel during the first week of December. The organization has grown in numbers and influence until it reaches every State, and is a recognized power in the land. Its membership includes nearly every waterway association, a great many boards of trade and commercial bodies, and a large number of individuals. One of its most honored associates is the Woman's National Rivers and Harbors Congress, which organized in June, 1908, with Mrs. Hoyle Tomkies, of Louisiana, as first president and leading spirit. Its present head is Mrs. Clara Barton Miller of South Carolina. The aims and purposes of this association are substantially the same as that of the men's Congress and they work together in the utmost harmony.

The last convention held sessions for three days—December 6, 7, 8, 1911—and it was a great success in every way, though somewhat marred by the resignations of Ellison and Fox. We were fortunate to secure for Captain Ellison's successor as secretary-treasurer Mr. S. A. Thompson, of Indiana, who for several years was connected with the Congress as assistant field director. Mr. Thompson was known twenty-five years ago as "Deep Water Thompson" because of his splendid efforts for improvement of the Lakes. He is a forceful writer and an orator of great power.

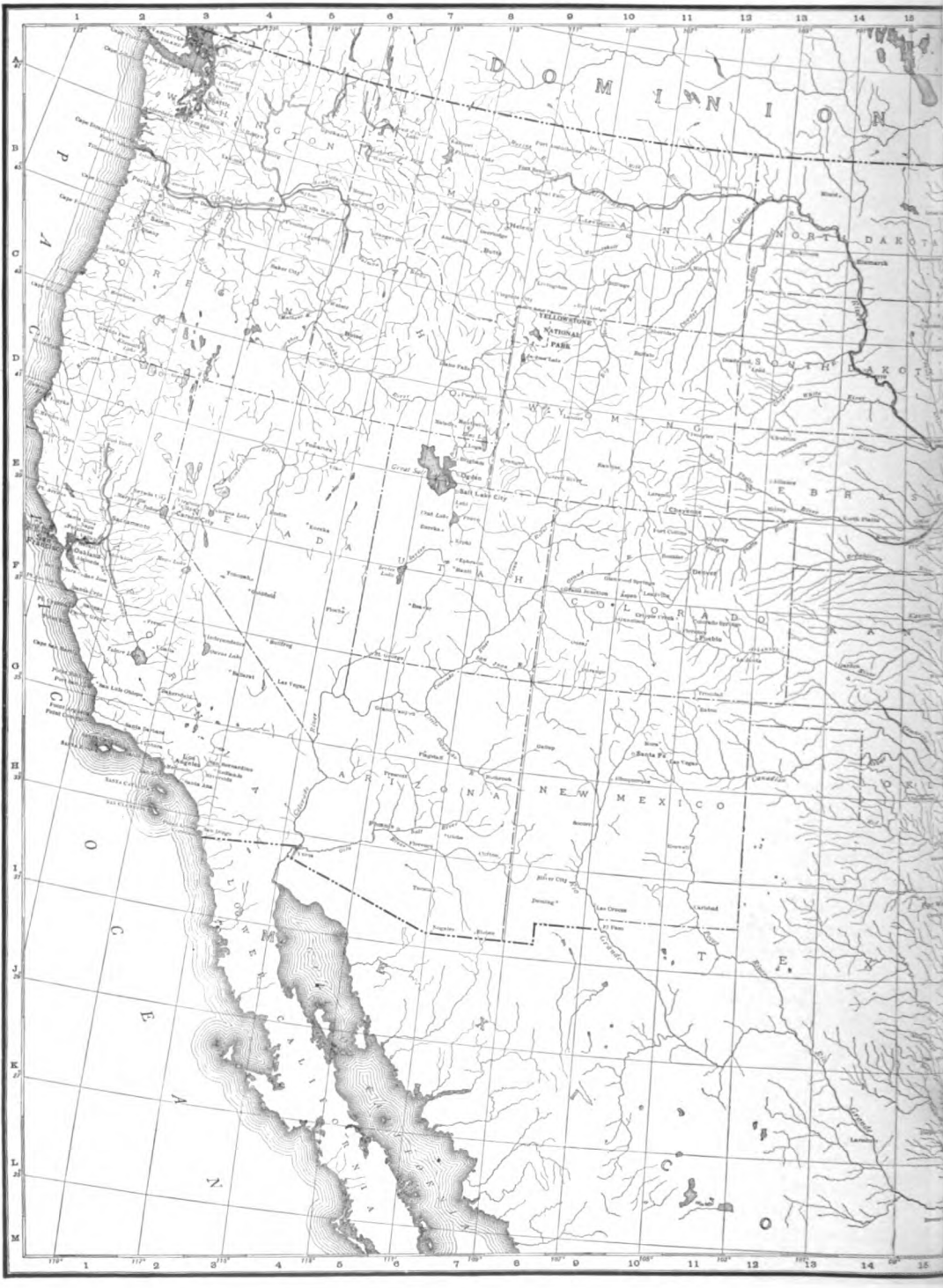
These conventions have been addressed by the leading men of the United States and other lands, and their proceedings constitute a set of valuable works on waterways and transportation generally. The ambassadors of France, Germany, Mexico, Brazil, and Great Britain, have told us what their countries were doing to utilize the water—*nature's best and cheapest agent of transportation*; presidents of great railroads have discussed the relative merits of water and rail; eminent engineers have talked about mighty waterway engineering feats at home and abroad—especially the famous canal system of our Canadian cousins and our own mighty

canal across the Isthmus; presidents of many local water-associations, our honored associates and colaborers, have explained the merits of their respective projects; and many of the nation's brightest minds have enlightened us on subjects more or less related to the use of water as an agent of transportation. A publicity bureau has been maintained in this city for three years under the able management of a veteran newspaper man, Mr. Edgar C. Snyder, and the best thought of our nation's statesmen, publicists and prominent men relating to waterways and kindred topics is disseminated daily and weekly through the press.

The National Rivers and Harbors Congress, as its name indicates, is truly national in purpose and effort. It has never advocated special projects no matter how colossal or meritorious they were, but always endeavored to bring about a generous, far-reaching policy that might promptly provide sufficient funds for the improvement of all worthy waterways, many of which are shown on the accompanying map. Its aim is to create general waterway sentiment; to make the country understand and appreciate the cheapness of water transportation as compared with rail, and the vast savings in freight charges resulting from well-improved and utilized waterways; and to assist in the passage of proper laws to regulate traffic by rail and water.

Since its reorganization in January, 1906, vast improvement has occurred in waterway sentiment and legislation. At that time and for several years prior thereto, river and harbor bills were enacted every three years; now they are annual, the same as other great appropriation bills. At that time the average annual appropriations for rivers and harbors were about twenty millions a year. For the past three years they have averaged over thirty millions a year, and waterway appropriations in the bill of the current year exceed forty millions. *Thus we see a change in six years from triennial to annual bills, and from less than twenty millions to over forty millions a year.*

Moreover, there is a decidedly better sentiment towards waterways than heretofore. It is conceded that they have rights which must be recognized and protected, and a system of laws is growing up





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to define and enforce them. Many communities are becoming aroused to the necessity of providing suitable water terminals, which in the vast majority of cases at the present time are owned and controlled by railways or private corporations. *They should be public property for public use.*

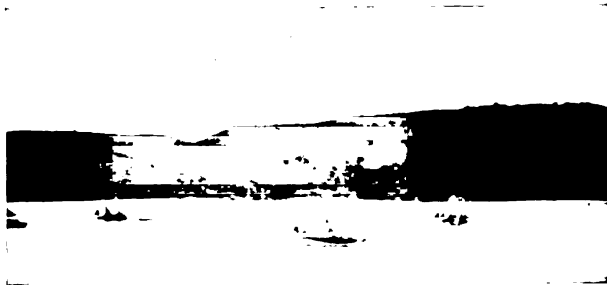
A notable result of the increased liberality in waterway appropriations is that a number of meritorious projects have been undertaken in a systematic manner, and are being pushed rapidly. Definite periods ranging from five to twelve years have been fixed for completing several of the more important projects, the length of time being determined largely by the rapidity with which the work can be advantageously carried on. Under this new and wise dispensation, projects will be finished in the near future which had been delayed so long under the old-time methods that everyone had lost confidence in them.

The organization has taken deep interest in legislation relating to the Panama Canal, regarding it as the greatest artificial water improvement ever undertaken by man and of supreme importance to the welfare of all Americans who go down to the sea in ships. It wishes to see this great canal so safeguarded by wise laws that rival agents of transportation may not be enabled to reap the benefits which the citizens of the Union are entitled to receive from the free water competition of this connecting link between the oceans.

Let it be distinctly understood, however, that the Congress is not opposed to railways. Its earnest desire is that rail and water shall cooperate in every proper way so as to give the cheapest and best transportation. It believes that railways and waterways are the natural comple-

ments one of the other, and while it wishes to do its utmost to secure all laws for improving every worthy watercourse in the Republic, for preventing improper interference by rail with movements of freight by water, and to create as perfect a system of terminals on watercourses as can possibly be devised, it expects to do this in the future, as in the past, without animosity towards railways, which it recognizes as the most beneficial agents of transportation the world has ever known. It wishes to be friendly with the railways, and why not? There is glory and business enough for both rail and water. There are many localities which cannot be served by water and belong entirely to the railroads. Moreover, it is well known that wherever there exist the best waters and the greatest number of boats, are also found the most prosperous railroads. It is earnestly hoped, therefore, that these two great agencies will work together in harmony for the good of the Union.

The Congress feels just pride in the partial success of its efforts for the past six years, and looks with confidence to the future in the belief that the next six will see the fruition of its aims. Much has been done, but the greatest is yet to come. Rivers and harbors now receive appropriations annually, and the items approximate forty millions a year; but the definite, comprehensive, business-like plan for improving every worthy watercourse is still unsettled; the problem of terminals is a giant one whose solution is scarcely yet begun; the actual navigation of rivers and internal waters—now sadly neglected—must be restored; and a system of laws must be evolved to insure full justice to every agent of transportation. Let the organization continue its fight until all these and many other good things have been accomplished.



EARLY HISTORY OF THE ERIE CANAL

By GEORGE CLINTON, JR.

THIS is the first of a series of articles on the Erie Canal which will give in succinct form a resumé of the most prominent facts leading up to the construction of that great waterway, the various improvements which have been made since its completion, and an account of the barge canal now under construction, with a description of the proposed terminals. Mr. Clinton may be said to have inherited his interest in the subject, for his grandfather, DeWitt Clinton, was the prime mover in building the Erie Canal, and his father, Hon. Geo. Clinton, has been a life-long advocate of its improvement.

A GLANCE at the map of the State of New York shows a fact which has proved of paramount importance in the development of the commerce of the United States and has given New York its preeminent position as the chief commercial State in the Union. The fact alluded to is the central position occupied by the State with respect to natural water routes. The Hudson, the Mohawk, the Delaware and the Susquehanna rivers, Lakes George and Champlain, the Great Lakes System and the Ohio River, through its branches, all center or border upon the State.



the Hudson is the only place throughout the extent of those mountain ranges where there is an easy passage from one side of them to the other, destitute of steep grades, and this fact is of the first importance in determining the location of any water route between the East and the West through the mountains. It is this very gap which has enabled the New York Central and Hudson River

Railroad Company to cross the State without encountering the heavy grades which railroads following other routes have necessarily encountered.

Long before the white man intruded upon the scene, the ease with which water communication could be had from New York to other parts of the continent east of the Mississippi was an important factor in giving to the "Long House" or League of the Five Nations (afterwards the Six Nations) the leading position among the Indian tribes, which they occupied until their strength was broken by the progress of civilization. These fierce warriors in their bark canoes extended their influence and the terror of their name for hundreds of miles beyond the territory which they actually occupied. They were known and dreaded from the Mississippi to the Atlantic, from Canada to the Carolinas, and it was to the existence of easy water communication that this fact was due.

Another feature of the topographical situation deserves attention. The place where the Mohawk River penetrates the Appalachian chain in its descent towards

The first settlers of the State of New York were not in sufficient number, nor did they extend their settlements far enough, to feel the need of artificial channels. Indeed, they had not the means to provide them, but it is significant that the first extensions of colonization within the State followed the course of the Hudson and the Mohawk, foreshadowing from the first the route which afterwards became the chief channel of commerce between the East and the West.

Little attention, if any, seems to have been paid during the Colonial period to constructing a means of communication between the Lakes and the Hudson. In fact, the project was just beginning to receive notice when the Revolution intervened and for the time interrupted its consideration.

During the years succeeding the Revolution, however, conditions changed, the western part of the State was rapidly becoming settled, and in addition to the

fur trade, which in the Colonial period furnished the chief subject of transportation between the Great Lakes country and the Atlantic Coast, there came a demand for an outlet through which the products of the soil then beginning to be raised in the western part of New York State could be brought to the sea. As roads were then few and bad, and transportation upon them difficult, the subject of water routes came naturally to the minds of men.

It has been a subject of much discussion as to who first conceived the idea of an artificial connection between the Great Lakes and the Hudson River. It is not the writer's intention to enter into this discussion. In fact, the question is one by its nature incapable of solution, as the idea must have occurred to many minds at about the same time, and to determine priority between them would be an impossible and profitless task.

In the language of DeWitt Clinton in his pamphlet, "Canal Policy of the State of New York," "several persons may at different times have suggested the utility or practicability of connecting the waters of the Hudson and the Great Lakes, and the idea would naturally occur to every intelligent person who visited our Western country, and has probably been entertained not only in the minds of most of the inhabitants, but has been frequently expressed by them at various times, and on different occasions. Any peculiar merit on this occasion must arise from initiating a procedure to obtain a proper plan of connection, from projecting this measure, from urging its adoption or from aiding in its execution."



DE WITT CLINTON, FROM A PAINTING BY CHAPPEL

Bearing this in view we shall begin our narrative with the first steps actually taken with a view to establishing a connection between the Great Lakes and the Hudson River.

II.

THE PRELIMINARY PERIOD

The first project which was presented in a tangible form appears to be that contained in the report of Christopher Colles, an Irish engineer, in a memorial to the Legislature of the State of New York with respect to certain improvements on the Mohawk River. In the year 1785, Mr. Colles presented a report to the Legislature in which he called attention to the gap in the Appalachian chain through

which the Mohawk River passes and to the proximity of the upper reaches of the Mohawk to Wood Creek, which is on the opposite side of the watershed. He also indulged in expressions which, in the light of history, seem almost prophetic, as to the astonishing effect which might be expected by a junction of the Mohawk River with the Great Lakes.

At that time the population of the State was not half a million and was almost entirely confined to its eastern portion. The West, however, was growing and both travel and commerce constantly increasing. Mr. Colles projected a canal at Rome to connect the Mohawk with Wood Creek so that access might be had by Oneida Lake and the Oswego River at Oswego, and proposed the formation of a company to construct this canal and two others on the Mohawk to avoid Little Falls and the Cohoes Falls. This project failed, however, for lack of subscriptions to the stock of the proposed company.

In the following year the Legislature appointed a commission consisting of Goldsbrow Banyar, Gen. Philip Schuyler and Elkanah Watson "to examine and report on making a canal from Wood Creek to the Mohawk River." Nothing seems to have followed from this appointment. In the same year a bill was introduced in the Legislature entitled "An act for improving navigation of the Mohawk River, Wood Creek and Onondaga River with a view to opening an inland navigation to Oswego and for extending the same, if practicable, to Lake Erie." This bill, however, did not become a law.

Though nothing resulted directly from these projects, they doubtless had their influence in arousing the interest of public men in the subject to which they related and led up to the formation of the canal companies which mark the next step in the evolution of the canal policy finally adopted by the State.

"The Inland Lock Navigation Companies" so called, consisting of the Western Inland Lock Navigation Company and the Northern Inland Lock Navigation Company, were private enterprises incorporated by act of the Legislature in 1792. General Schuyler presided over both bodies.

It was contemplated that the Western Company should open a line of navigation

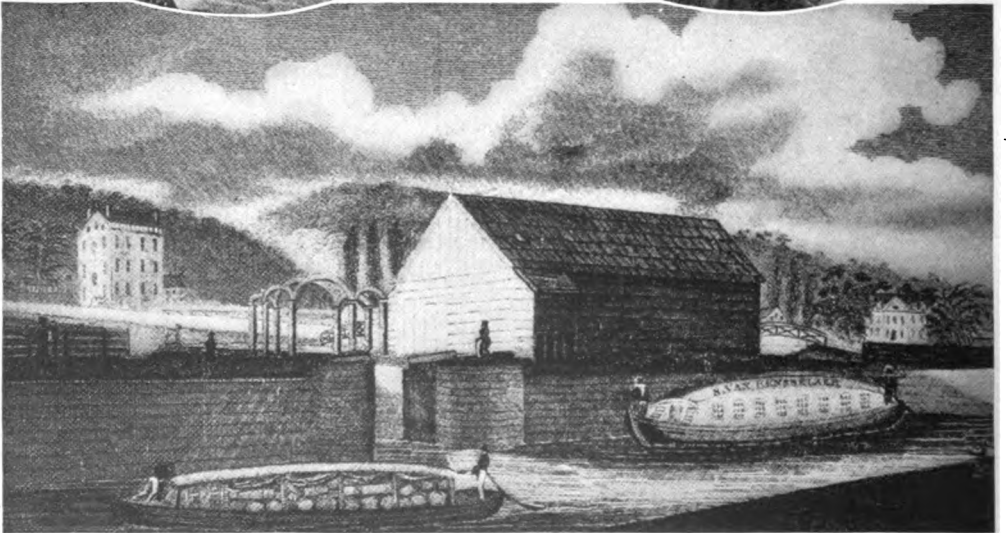
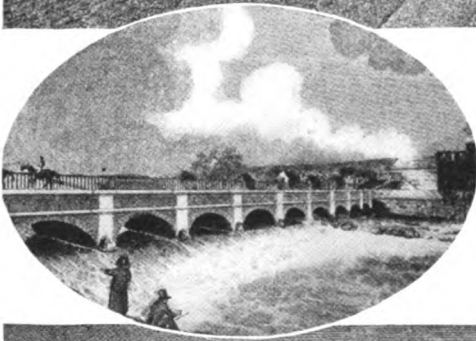
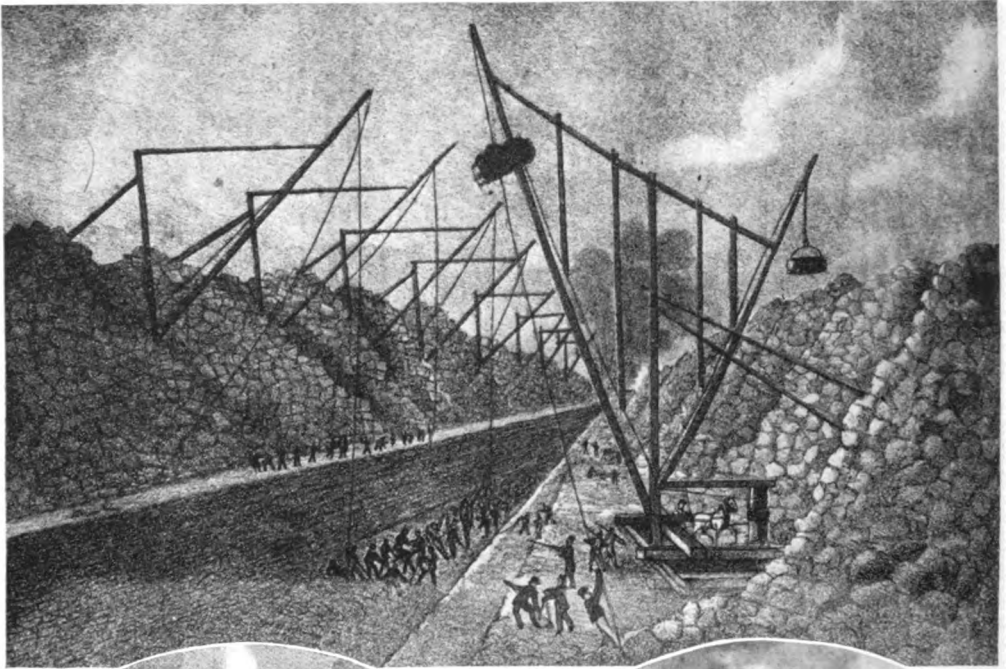
from the Hudson River to Lake Ontario and Seneca Lake; and the Northern Company, a similar line from the Hudson River to Lake Champlain. The canals of the Western Company were to be of dimensions to accommodate vessels drawing two feet of water, forty feet long and twenty feet beam, and the company was to be entitled to charge tolls not exceeding the sum of \$25.00 per ton burden of the vessels passing through the canals.

It was the intention of the promoters and of the Legislature that the necessary funds for construction should be raised by subscription to the stock of the companies, but state aid to the extent of \$12,500 was provided for, to be paid when double that sum had been spent on construction. The original estimate for the work undertaken by the Western Company to open navigation between the Hudson River and Seneca Lake was \$200,000, but before the company was finally taken over by the State its expenditures for that purpose amounted to nearly half a million.

This work consisted of a canal about two miles in length connecting the Mohawk River and Wood Creek, which would accommodate boats drawing three and one-half feet of water, a shorter canal at German Flats and locks at Little Falls. The company had considerable difficulty in procuring funds to prosecute the work, and the State becoming a large stockholder and creditor, ultimately absorbed the company and its canals when the construction of the Erie Canal was finally undertaken.

The work accomplished by the Western Inland Lock Navigation Company not only disappointed its stockholders so far as financial returns were concerned, but was totally inadequate to accommodate the growing commerce between the eastern and western parts of the State, and the company never completed the work it had undertaken. In the meantime, the idea that the canals should be constructed and owned by the State had been gaining ground.

In March, 1810, Joshua Forman of Onondaga suggested to Senator Jonas Platt at Albany that, in the interests of the Western Inland Lock Navigation Company, the Legislature appoint a commission to investigate and report with respect



VIEWS OF THE ORIGINAL ERIE CANAL—From *Old Prints and Golden's Memoir* (1825)
PROCESS OF EXCAVATION, LOCKPORT

VIEW OF THE AQUEDUCT BRIDGE AT ROCHESTER

BUFFALO, FROM THE LIGHTHOUSE

ENTRANCE OF THE ERIE CANAL INTO THE HUDSON AT ALBANY

to extending navigation by water from Oneida Lake to Seneca Lake. Senator Platt took up the matter with DeWitt Clinton, and by the combined influence of the two the Legislature in March, 1810, appointed a commission of seven members who were to examine the country from Lake Erie to the existing waterways terminating at Oneida Lake, with a view to finding a practicable route for a canal connecting the two points.

This commission consisted of Gouverneur Morris, Stephen Van Rensselaer, DeWitt Clinton, Simeon DeWitt, William North, Thomas Eddy and Peter B. Porter. The commissioners traveled the entire route in the year of their appointment, and DeWitt Clinton has left a journal of the trip which contains many interesting observations upon the state of the country at that time. This appears to have been the first direct connection of DeWitt Clinton with the canal policy of the State.

The commission made a report to the Legislature in which they suggested the construction of a canal upon the principle of an inclined plane from Lake Erie to a point between Schenectady and Albany, and from thence by locks to the Hudson. This suggestion as to the method of constructing the canal was chiefly due to Gouverneur Morris and was not that which was finally adopted. James Geddes accompanied the commission on their trip as surveyor, and thus took part in the initial steps towards the construction of the canal, in which he afterwards acquired a great reputation.

The commission reported to the Legislature in March, 1811, but their work being incomplete, they were continued, or rather a new commission was created in April, 1811, consisting of the same men, with the addition of Robert Livingston

and Robert Fulton. The commissioners were directed to ascertain whether the Federal Government would assist the project before the rights of the Western Inland Lock Navigation Company could be acquired by the State, and to consider the financial problems involved in the enterprise.

This commission reported that the canal could in their opinion, be constructed at a cost of six millions of dollars. They were unsuccessful in obtaining any assurances of aid from the Federal Government or any practical assurances of aid from the other States of the Union, and their negotiations with the Western Inland Lock Navigation Company resulted only in having that company fix a price for its property and rights which they deemed exorbitant. The commissioners were strongly in favor of having the work undertaken by the State at once, and at their request a bill was passed by the Legislature, authorizing them to deal conditionally with the Western Company for the surrender of its rights and to negotiate for a loan of five millions of dollars for the prosecution of the work.

Nothing was accomplished at this time, as the War of 1812 interrupted the labors of the commission and diverted the attention of public men from the consideration of the problem, and in 1814 the Act authorizing the commissioners to negotiate a loan was repealed. In the following year public interest was again aroused in the canal project and a public meeting was held at New York at which Judge Platt, DeWitt Clinton and others spoke in favor of construction of the canal by the State. By direction of the meeting a memorial to the Legislature was prepared by DeWitt Clinton, which ably set forth the reasons in favor of the enterprise and had great weight in determining the action of the Legislature when the subject came up for its consideration in 1816.

In March, 1816, the commission appointed in 1811, reported to the Legislature, urging construction of the canal from Lake Erie to the Hudson and also the Northern canal, or as it is now termed, the Champlain Canal. Mr. Morris did not concur in this report. In April of that year



THE COHOES FALLS FROM THE DAM

a third commission, consisting of Stephen VanRensselaer, DeWitt Clinton, Samuel Young, Joseph Ellicott and Myron Holley, was established with a fund of \$20,000 to make necessary surveys, plans and estimates for the proposed canals and to consider and report upon the financial situation.

The commission organized with DeWitt Clinton as president, and divided the work on the Erie Canal into a Middle, an Eastern and a Western section, which division has in substance been maintained ever since. The commission reported to the Legislature in February, 1817, recommending the construction of a canal with a depth of four feet, twenty-eight feet wide at the bottom, forty feet at the surface and with locks ninety feet long by twelve feet wide, saying that "vessels carrying one hundred tons may navigate a canal of this size."

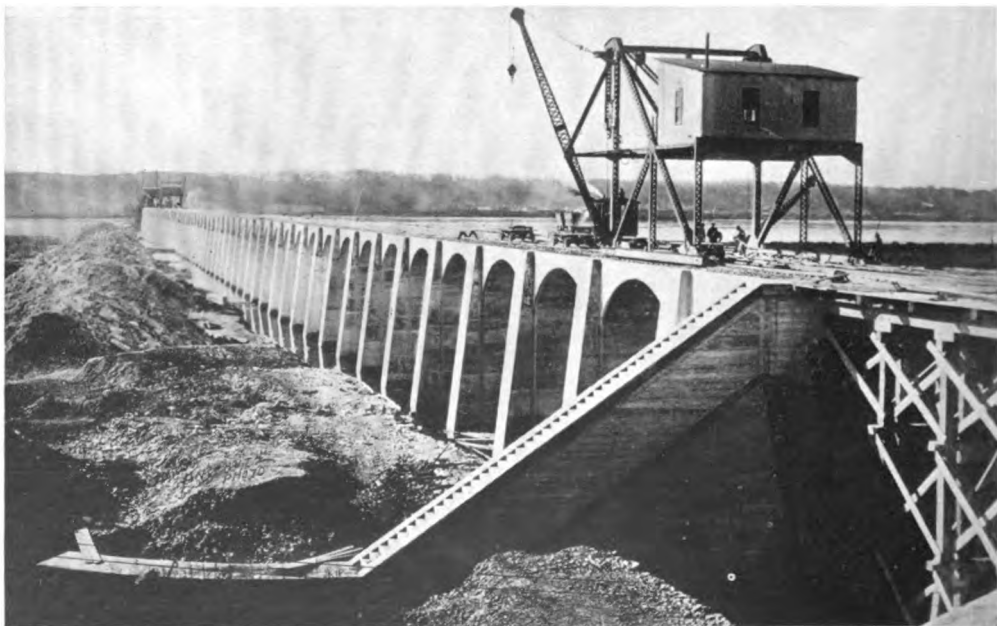
Their report gave the plans in detail and an estimate of the cost of construction, and was made chiefly from actual surveys of the route. They estimated the

cost of the canal from Lake Erie to Albany at slightly less than five millions of dollars, making an average of a little over \$13,800 per mile. They also obtained from the Holland Land Company an offer of a grant of a large tract of land for canal purposes. They were, however, again unsuccessful in their attempts to procure Federal aid.

The report of the commissioners became the subject of animated discussion and debate in the Legislature and it was largely due to the eloquence and power of Elisha Williams of Columbia that the Legislature took favorable action. On the 15th day of April, 1817, an act was passed authorizing the commencement of the work under the direction of the commission already in existence, which was continued in office. It was not thought advisable to authorize the construction of the entire canal at first, and the middle section only was undertaken.

EDITOR'S NOTE:—The next installment of Mr. Clinton's History of the Erie Canal, which takes up the construction period, will appear in an early issue.

THE COLOSSAL KEOKUK DAM FOR WATER POWER AND NAVIGATION



Looking from the Illinois end of the Keokuk Dam, the longest concrete wall ever built. Seven-eighths of a mile from the Illinois shore will be the power house, 1800 feet long, standing at right angles to the section here shown. Next the Iowa shore is a lock as wide as those at Panama and which will replace with one lift the three locks now in use. Built by private capital, primarily for power, the dam makes a great improvement in navigation, as it creates a slackwater lake 65 miles long. Hugh L. Cooper is chief engineer. Photo by Anschutz, the official photographer.

A NEW USE FOR WATERWAYS

By JEROME FANCIULLI

THE hydro-aeroplane, the new craft designed for both air and water, to which the students of aviation are now turning for the solution of safe navigation of the air, is the subject of this article. Mr. Fanciulli is the Vice-President of the Curtiss Aeroplane Company and has been identified with aeronautics since the infancy of that science. He speaks not only from a thorough knowledge of the subject but with an undercurrent of enthusiasm that is most convincing of the possibilities of this remarkable craft.

AN article dealing with aviation wouldn't be in keeping with established custom if reference wasn't made to Icarus' famous flight; to show how man has aspired to emulate the birds for ages past. The ancient Greek aviator had one good practical idea, though, when he selected the sea as his flying course. The up-to-date Icaruses are all sprouting webfeet, and indications are that over-water flying is going to prove the salvation of the aeroplane industry.

Beginning with the earliest experimenters, those concerned in the progress of dynamic flight have recognized the advantages that make water courses the logical "aviation fields." The uniform smoothness of the water's surface disposes of the dangers of ditches, tree-stumps and other irregularities of the land. Obstacles on the water are few and far between. In flights over land, aviators are continually dodging or colliding with trees, buildings, stone walls, fences and other inconveniently located objects that conspire to confine aviators to the dare-devil class.

One of the principal conditions existing that makes water-courses appeal to aviators is the steadiness of the wind, due to its having a free sweep. The sweep of the wind holds no terrors for the flying men; it is an unsteady, or choppy wind that causes the accidents that have been attributed to windy weather. When a wind sweeps over a bay, or lake, or river, it is not broken up into eddies and gusts as it is over an uneven country where even the differences of temperature in light and

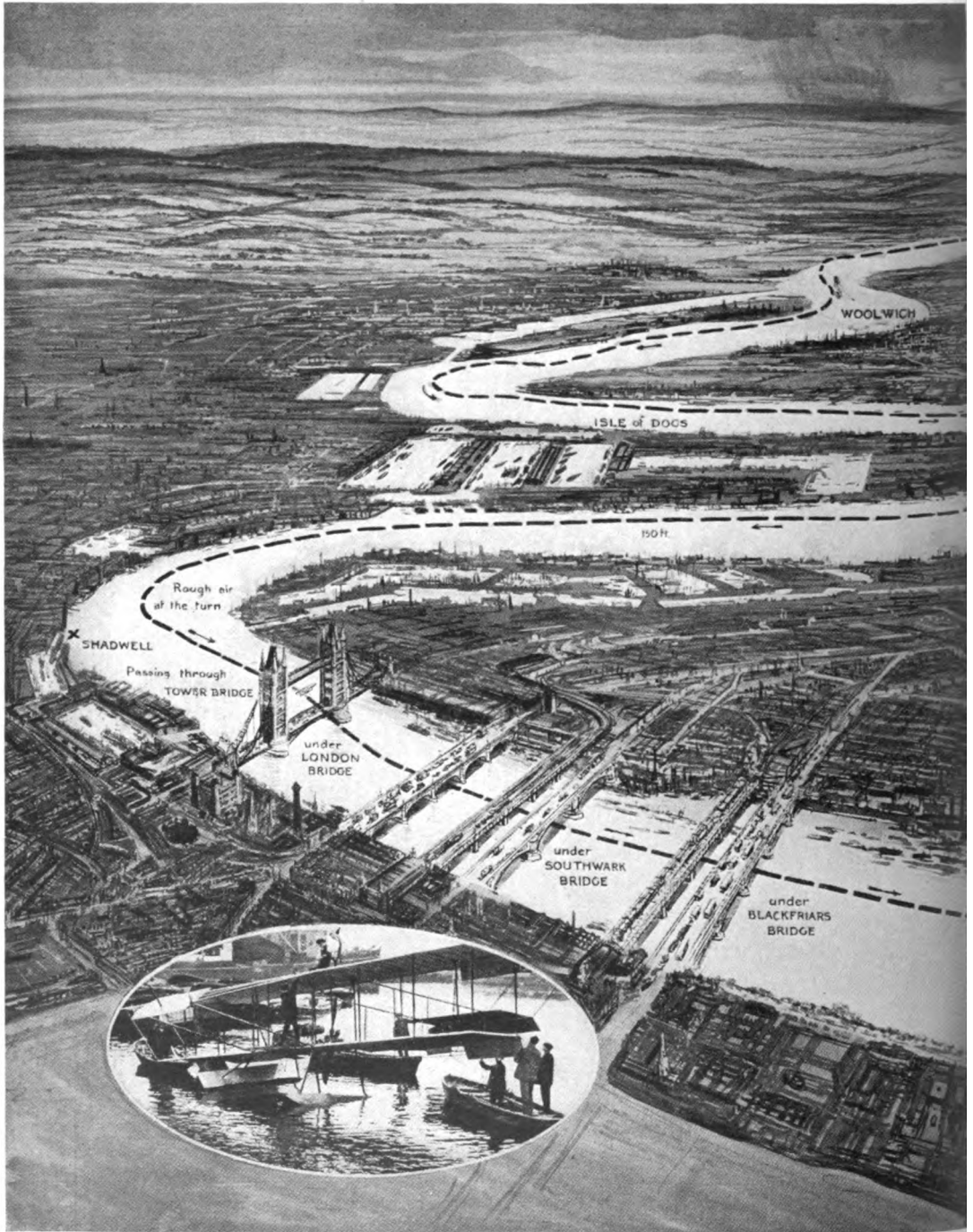


shade cause upward and downward currents of air, "Swiss Cheese Atmosphere," as the aviators call it, and small or rough landing places are the two most dangerous conditions the man-birds have to contend with. With these dangers eliminated, as they are in over-water flying, there remains only the possibility of the flying apparatus itself giving way.

The peculiar conditions surrounding marine flying safeguard the operator and his passengers even when his machine collapses in the air. The hydro-aeroplane can be operated close to the surface of the water. In consequence, under the worst possible circumstances, a ducking is the most serious "injury" the occupants of the machine can suffer. This is not a theory born of enthusiasm. It is a demonstrated fact.

I have witnessed accidents to hydro-aeroplanes in which the operator was unhurt, but which would have resulted in certain death had they occurred on land. Last February, while I was having demonstrations of the Curtiss hydro-aeroplane made on the French Riviera, Hugh Robinson, the aviator, was forced to dive his machine straight down into the water in order to avoid running down a large crowd that had gathered on the edge of the beach. Traveling at a speed of sixty miles an hour with a forty-mile wind, which means a speed of nearly one hundred miles an hour relative to the earth, Robinson shot out of the machine when it hit the water. He was not even stunned.

OLD LONDON TOWN GETS A GLIMPSE OF



T. K. McCLEAN'S FLIGHT ON THE THAMES, MARKING THE
FIELD UNDER THE AUSPICES OF "THE SPHERE"

WHAT THE "WATER-BIRD" MAN CAN DO



FIRST SUSTAINED FLIGHT ON THAT HISTORICAL WATERWAY

THROUGH WHOSE COURTESY THIS PICTURE IS USED

but his machine was practically a complete wreck.

He is only one of a number of aviators who have refused and determined not to make any more flights with land-aeroplanes, although he flies the hydro-aeroplane by the hour for the fun there is in it. Lieutenants Ellyson and Towers, of the United States Navy; Louis Paulhan, the Frenchman; Grahame-White, the English aviator, and a score of others prominent in the flying world, including Glenn Curtiss, have declared they will never again attempt flights over the land, although all of them are regular operators of the aquatic aeroplanes. They all maintain that marine flying is even safer than automobiling.

The idea of over-water flying is not new. If the powerful light-weight gasoline engines on the market now had been built fifteen or twenty years ago, it is doubtful if there ever would have been anything but marine aeroplanes. Langley, Chanute, Kress and many others conducted their early aeroplane experiments on the water. Langley, who was at that time at the head of the Smithsonian Institution, attempted to launch his machine from a raft on the Potomac River near Washington. Chanute, the father of the biplane, conducted his experiments on the shores of Lake Michigan. Kress built a hydro-aeroplane in Austria, as long ago as 1898.

It was the steadiness of the sea-winds that induced the Wright brothers to conduct their early trials on the North Carolina coast. The Aerial Experiment Association, with Alexander Graham Bell at



its head, located its experimental station on the shores of Lake Keuka, in New York

State, making flights over the ice-covered lake in winter.

Since Henry Fabre, a young French engineer, made the first flight with a hydro-aeroplane, on March 28, 1910, the advancement of this type of flying machine has been very rapid. In this country the lead was taken by Glenn Curtiss, who produced a successful marine flying machine in January, 1911, and by W. Starling Burgess, the boat builder of Marblehead, Massachusetts, in the latter part of the same year.

The Curtiss hydro-aeroplane is supported on the water by a flat-bottomed pontoon, two feet wide and sixteen feet long. The Burgess type of hydro-aeroplane uses two long slender pontoons, placed about six feet apart. These pontoons take the place of the wheels of a land apparatus, and there is really only that one difference between the water and land machines.

The single pontoon flotation requires two auxiliary pontoons, one placed at the end of each wing; but it is claimed for this type that the single pontoon accommodates itself to the waves of rough water without causing the wings of the hydro-aeroplane to dip into the water, thus capsizing the machine.

The first important flight over a water-



© Paul Thompson, N. Y.

AT WEYMOUTH, ENGLAND, LIEUT. GREGORY DROPPED A LUMP OF METAL WEIGHING 300 POUNDS NEAR THE ROYAL YACHT "VICTORIA AND ALBERT," FROM AN ALTITUDE OF 400 FEET, TO DEMONSTRATE TO KING GEORGE HOW A BATTLESHIP MIGHT BE DESTROYED.

course was that made by Mr. Curtiss from Albany to New York, on May 29, 1910, for the *New York World's* ten-thousand-dollar prize. The distance of approximately 152 miles was made in 152 minutes, without counting the time occupied in stopping at Poughkeepsie for fuel and oil. The machine used on this occasion was an ordinary Curtiss aeroplane, having the land equipment, but supplemented by two cylindrical pontoons that would have permitted the aviator to alight on the water in case of necessity.

It was that flight which led Mr. Curtiss to devote himself seriously to the development of the hydro-aeroplane. On finishing his trip from Albany, Mr. Curtiss said that nothing he had ever experienced was so inspiring as the flight along the Hudson Valley, and that the conditions were so perfect that he had nothing to do but enjoy the scenery.

Even before the hydro-aeroplane had become perfected other long flights over water were made with machines equipped with pontoons for alighting, but not arising, from the water. Mr. Curtiss flew from Cleveland to Sandusky and back,

over Lake Erie, for a distance of 140 miles. J. A. D. McCurdy made a wonderful flight from Key West to Havana, a distance of 100 miles across the Gulf Stream. He was compelled to alight on the water near Morro Castle, but suffered no mishap. Other flights were made in Europe, including a number of trips across the English Channel.

It has been through the construction of the hydro-aeroplane, however, that the field for marine aviation has really opened up. Robinson's flight down the Mississippi River, from Minneapolis to Rock Island, a distance of nearly 400 miles, demonstrated the practicability of the marine aeroplane. On this occasion, the aviator delivered and received mail at the various important towns along the river. Traveling at a speed that averaged over seventy

miles an hour, the hydro-aeroplane on that occasion demonstrated in a very practical manner a new use to which the waterways of the country will be put.

To my mind this carrying of the mails offers the most practical application of the marine flying craft in its present stage of development. Many places situated on watercourses suffer serious loss through poor railroad service. This means poor mail service, which is detrimental to any community. Aeroplane manufacturers can now build machines that can carry nearly a ton of weight for long distances, at a speed of sixty miles an hour. Aerial mail delivery service with such machines on those waterways reaching towns that have little or no railroad service would be of incalculable value.

Aerial mail service along watercourses would afford the fastest transportation of the mail at a minimum expense. A route two hundred miles long could be covered twice a day with a thousand pounds of mail matter at a total annual expense of \$18,000, including the cost of equipment. These machines, used for aerial mail service,

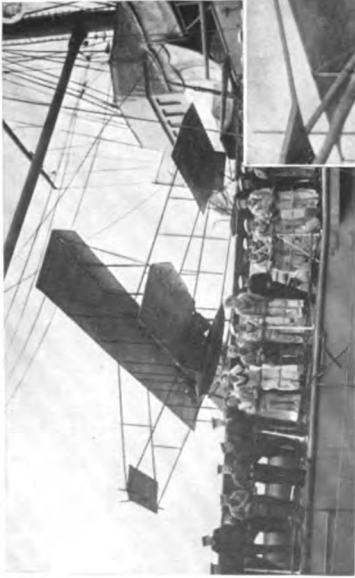
could do a double duty in that the operators could discover breaks in the river banks during high-water periods. It is even possible that they could discover changes in the channels of the streams, this depending on the clarity of the water. They could, most certainly, discover forest fires, and in doing these duties would be acting as a very efficient patrol.

As an auxiliary for the Navy, hydro-aeroplanes are of proven merit. Mr. Curtiss on one occasion was hoisted aboard the battleship "Pennsylvania," after having alighted alongside in one of his hydro-aeroplanes. After being lowered again into the water he flew back to shore. This was done nearly two years ago. Lieutenants Towers, Ellyson and Rodgers, hydro-aeroplane operators of the United States Navy, have made many long flights



THE CURTISS "FLYING BOAT"
THE LATEST DEVELOPMENT OF THE HYDRO-AEROPLANE

PRACTICAL DEMONSTRATIONS OF THE HYDRO-AEROPLANE



THE WAR EAGLE'S AERIE
AN HYDRO-AEROPLANE ON H. M. S. "HIBERNIA"



MANOEUVERING
CHARLES C. WITMER MANOEUVERING A CURTISS
HYDRO-AEROPLANE ON THE HUDSON RIVER
DURING THE NAVAL RENDEZVOUS



CARRYING THE MAILS
CAPT. PAUL W. BECK, U. S. A., IN CURTISS BIPLANE, AT NASSAU, CARRYING POSTMASTER-GENERAL HITCHCOCK, ACTING AS POSTMAN AND CARRYING U. S. MAIL SACK WEIGHING FORTY POUNDS. FIGURES IN FOREGROUND, FROM LEFT TO RIGHT, ARE POSTMASTER-GENERAL HITCHCOCK, CAPT. BECK & ATTORNEY-GENERAL WICKERSHAM



AS A LIFE-SAVER
ROBINSON IN HYDRO-AEROPLANE RESCUING SIMON AT THE CHICAGO AVIATION MEET. A PRACTICAL PROOF OF THE LIFE-SAVING POSSIBILITIES OF THE HYDRO-AEROPLANE



THE CAMERA AND HYDRO-AEROPLANE
A REMARKABLE PHOTOGRAPH TAKEN FROM AN AEROPLANE IN MID-AIR, SHOWS WHAT A WAR SPY COULD DO. TAKEN AT A HEIGHT OF 1200 FEET, WHILE GOING 45 MILES AN HOUR. MR. FASOLD, THE PHOTOGRAPHER. MR. HOWARD GILL, THE AVIATOR

*Boston Photo News Co.
Underwood & Underwood, N. Y.*

in smooth and rough waters, while using the Government's marine flyers. For naval purposes improvements are yet to be made in the matter of launching from the war vessels and in storing the machines compactly on shipboard. These same features will make the hydro-aeroplane a useful yacht tender.

Aside from their value to the Navy, the aquatic aeroplanes have already been recognized as excellent auxiliaries to the coast defences. For detecting the approach of an invading enemy and for patrolling the coast swiftly and thoroughly, they will prove more efficient and less expensive than scout cruisers. Traveling at the rate of seventy or eighty miles an hour, with a crew of two, one hydro-aeroplane could patrol a coast line that would require a half-dozen cruisers with crews aggregating nearly a thousand men.

The equipment of life-saving stations with hydro-aeroplanes has been seriously discussed. There are already two instances on record where hydro-aeroplanes have figured in rescues on the water. At the Chicago aviation meet last year, Hugh Robinson was flying from the yacht basin at Grant Park, using a Curtiss hydro-aeroplane, when Simon, flying a monoplane that had no means of floating on the water, was forced to descend to the lake. In less than a minute after the monoplane struck the water, Robinson was alongside rendering assistance. On another occasion W. B. Atwater, in an hydro-aeroplane, flew to the rescue of two naval aviators who came to grief in San Diego Bay.

The most beautiful scenery is that along watercourses. How much of it can be seen from a railroad train or an automobile as compared with an aeroplane from which a moving bird's-eye panorama takes in the country as far as the eye can see? Add to this the exhilaration of speeding at express train speed—with no constables and speed laws to worry about—and a smooth unobstructed place for alighting at all times.

The hydro-aeroplanist is vitally interested in the improvement and care of the waterways of the country. That statement has not many hydro-aeroplanists to back it up; nevertheless it is significant because, in judging the future by the past progress in aviation, marine flying must become immensely popular. For hydro-aeroplana-

ning, a watercourse, to be of value, must be at least eighty feet wide. This does not mean that there cannot be stretches of a mile or two where the watercourse could be narrower.

So far as the waterways over which the hydro-aeroplane would fly are concerned, those things which menace marine navigation would to some extent annoy the marine aviator.

A flight from New York to Chicago, by means of an hydro-aeroplane, is thoroughly practicable, but if there were a good broad canal from Toledo to Benton Harbor or Michigan City, the length of the route which would have to be followed would be materially shortened. In two or three days the hydro-aeroplanist could take a thousand-mile jaunt to Chicago in the pleasantest way imaginable, whereas it now takes an automobilist a week to ten days to make the trip in comfort. I venture to suggest that when the pleasures of aquatic flying become more generally known, the movement for improved waterways will enlist many new enthusiasts, for which the hydro-aeroplane will be responsible.

The various uses I have described for the hydro-aeroplane are now possible, and yet the water-flying machine of today is only a crude beginning. The first step towards refinement is the so-called flying boat. Although not nearly perfected, there are already a number of successful machines of this type. In this country Mr. Curtiss has again taken the lead in this latest development of the aeroplane industry. Much progress has also been made abroad, where Lieutenant Conneau, of the French Navy, made a flight in a Donnet-Leveque flying boat from Paris to London.

This machine will undoubtedly be the connecting link that will bring the flying machine into a really substantial commercial field. It will be the aerial touring car, and will be most useful for mail carrying, parcels posts, fast express and passenger service between cities, and as a yacht tender.

Aeroplane manufacturers have taken up the hydro-aeroplane most enthusiastically, the attention of the aviation world is centered on the development of this type of craft, and soon the vast possibilities of over-water flying will begin to be realized.



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WHEN President William Howard Taft attached his signature to H. R. 21477, commonly known as The River and Harbor Bill, on July 25, 1912, he emphasized in the strongest possible manner the position taken by the National Rivers and Harbors Congress since its inception, that there should be an annual river and harbor bill, and that the policy of sporadic appropriations for the improvement of the rivers and harbors of the country should forever be abandoned.

The River and Harbor Act of 1912 appropriates \$33,259,370.50, of which \$31,059,370.50 is cash and \$2,200,000 is contract authorizations.

Of the 265 items in the act of 1912, 178 are for the maintenance of completed works, 35 for continuing work in whole or in part by governmental agencies and hired labor, 37 for completing work and 15 for continuing work where provision for completion is not regarded as essential, at this time, by the Chief of Engineers.

The act appropriates \$600,000 for the purchase of a canal between Norfolk, Va., and Beaufort, N. C., the second link in the chain of inland waterways between

New England and the Florida Keys.

A Harbor of Refuge is provided for at Cape Lookout, N. C., with an appropriation of \$300,000.

Six millions are made available for the prosecution of levee construction and bank revetment on the Mississippi. The Ohio River receives \$4,541,000 in cash and contract authorizations to prosecute its great system of slack-water navigation.

A fourth lock on the St. Mary's River is authorized, with an appropriation of \$300,000 to begin work.

The Missouri River is to be made a magnificent highway of commerce, the Act of 1912 carrying an appropriation of \$800,000 which, with an appropriation of \$600,000 carried in the Sundry Civil Bill, makes available \$1,400,000 to be expended between Kansas City and the mouth.

Nearly two millions are available for the Columbia River in the States of Oregon and Washington.

In many particulars the Act is far in advance of previous measures of like character and takes advanced stand for projects that, until this year, were in a formative state.

WATERWAY LEGISLATION—PAST AND PRESENT

By STEPHEN M. SPARKMAN, M. C.

MR. SPARKMAN is certainly thoroughly well qualified to write concerning legislation for waterways. He has represented the First Florida District in Congress since 1895 and is Chairman of the Committee on Rivers and Harbors, of which he has been a member since 1896.

THE improvement of the harbors and navigable waterways of the country by the Federal Government, though attended with many difficulties in the earlier years of the Republic, has nevertheless been carried on with a marked degree of success. The obstacles in the way of this class of work during the first decades of our history were largely the result of political conditions and the construction placed upon the Federal Constitution by many of our leading statesmen.

The strict constructionist of that instrument could for a long time find therein no warrant for the expenditure of money by the General Government on rivers and harbors, no matter what the necessities demanding their improvement. Few in those earlier days thought of looking to the commerce clause of the Constitution for any such power. In fact many, including prominent jurists of that period, regarded that provision as only furnishing authority for the promulgation of rules by which interstate commerce might be regulated. It was easier to find authority for the construction by the Federal Government of post roads, whether intra or interstate, and early in our history as a nation we were more inclined to enter upon that line of governmental activity than to improve our navigable waterways.

To be sure, this sentiment against the participation by the Government in the improvement of rivers and harbors was not unanimous, but it was sufficiently strong to confine Congress for many years to permissive legislation, mainly the granting of authority, to make such improve-



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ments, to individuals or to the States. Gradually, however, and following the decisions of the Federal courts, cautiously enlarging and extending the scope of the commerce clause in the Constitution as at first understood, this sentiment underwent a change, and as early as 1816 Congress began to appropriate for river and harbor improvement; doing so, however, intermittently and sparingly for many years.

It was not until the formation of the Rivers and Harbors Committee, in 1883, that the national law-making body seriously entered upon that class of work. Down to that time only \$125,147,022.38 had been appropriated, bills for which had been reported mainly by the Committee on Commerce, now the Interstate and Foreign Commerce Committee, though thirteen had been prepared and submitted by the Committee on Ways and Means, and three by the Committee of the Whole House without reference to any special or standing committee.

Since the formation of the Rivers and Harbors Committee, a period of only twenty-nine years, a little over \$575,000,000 has been appropriated for the improvement of our harbors and inland waterways, the whole aggregating a little upward of \$700,000,000. Of this, \$186,576,653.21 have been for the Atlantic Coast harbors and waterways; \$66,429,803.17 for the Gulf and its waterways, exclusive of the Mississippi River; \$53,281,821.36 for the Pacific and its rivers; \$131,557,941.20 for the Great Lakes basin; and \$270,697,173.77 for the Mississippi River system, while about \$5,500,000 have

been for the Hudson Bay basin, Alaska, Porto Rico, Hawaii, and for miscellaneous purposes.

The total number of improvements for which this aggregate has been appropriated is slightly in excess of five hundred and thirty. Now \$700,000,000 is a large sum for any country to expend on its harbors, rivers and canals, and it proclaims the fact that the Federal Government has not neglected our navigable waterways.

Nor have the results been disappointing, whether we consider the physical work accomplished or the benefits accruing to commerce. The most of the projects undertaken have been carried to completion, resulting in marked improvement of the navigable features of the waterways. Channels have been widened, banks made more stable and eighteen important canals constructed; and where greater depth has been sought, as in most instances, the increase has been from one to twenty-six feet. So that with our three hundred and one harbors, great and small, and our twenty-five thousand miles of navigable rivers and canals, we have the finest system of waterways in the world. When we consider that no stream, even though classed as navigable, is in its natural state suitable for modern commerce, and that all of our harbors have required improvement to fit them for the ever-increasing demands of commerce, one can readily understand that at least adequate physical results have come from the large aggregate of appropriations made.

Then, too, the benefits accruing to the commerce of the country, both foreign and domestic, as evidenced by its phenomenal growth following the physical development of those waterways, have likewise been gratifying. It is true that on a few projects, commercial results commensurate with the outlay have not followed improvement, but in a large majority of instances an increased commerce has been the result.

Mr. Alexander H. Weber, C. E., Assistant Engineer and Secretary to the Board of Engineers for Rivers and Harbors, in a very interesting and instructive article written in 1910, estimated this increase at 340,217,700 tons. In that statement reference is made to the total tonnage of all rivers, harbors and canals, which in-

cludes many duplications; but it is nevertheless instructive, as it shows the commercial importance of the respective improvements. The actual existing water-borne commerce is somewhat difficult of ascertainment, but Mr. Weber fixed the amount of the then existing commerce, after due allowance for duplications, at approximately 256,000,000 tons. The Interstate Commerce Commission makes it something more, giving the amount for the year 1906 as 265,545,804 tons. Even the smaller figures present a good showing and one that should greatly encourage the friends of waterway improvement.

But the whole story is not told in a simple statement of the increase of our water-borne commerce. It is worth much to furnish the people with additional facilities for the distribution of their products among the consumers of this and foreign countries. It is also gratifying to find these facilities utilized for the purposes designed, resulting in a largely increased water-borne commerce. But when we consider the great reductions in freight rates that have come as a result of these improvements, the full significance of the work done may be appreciated.

It is difficult to determine just what this reduction has been, but we know it is large. The Annual Reports of the Chief of Engineers, who is required to report upon the effect of such improvements on freight rates, show that in many instances such reductions have been as much as fifty per cent., and even more in some localities, which would indicate that the reductions effected have averaged more than a dollar a ton. Even if an average saving of half that amount has been effected each year on our water-borne commerce alone, the aggregate for all these years has been enormous and amounts to much more than the large sum expended on our waterways. When to this saving is added the influence these improvements have exerted over railroad transportation, the freight tonnage of which amounts now to more than one billion tons per annum, it will be seen that the people have been well repaid for the large outlay by the Federal Government, even though not all the waterways thus improved have shown satisfactory results so far as increased traffic is concerned.

As before stated, there are not many

WHAT THE THREE LEADING PARTIES SAY ABOUT WATERWAYS



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FROM DEMOCRATIC PLATFORM

We renew the declaration in our last platform relating to the conservation of our natural resources and the development of our waterways. The present devastation of the lower Mississippi valley accentuates the movement for the regulation of river flow by additional levee and bank protection below, and the diversion, storage and control of the flood waters above and their utilization for beneficial purposes in the reclamation of arid and swamp lands and the development of water power, instead of permitting the floods to continue, as heretofore, agents of destruction. We hold that the control of the Mississippi River is a national problem. The preservation of the depth of its water for the purpose of navigation, the building of levees to maintain the integrity of its channel, and the prevention of the overflow of the land, and its consequent devastation, resulting in the interruption of interstate commerce, the disorganization of the mail service and the enormous loss of life and property impose an obligation which alone can be discharged by the general government.

To maintain an adequate depth of water the entire year and thereby encourage water transportation, is a consummation worthy of legislative attention and presents an issue national in its character. It calls for prompt action on the part of Congress, and the Democratic party pledges itself to the enactment of legislation leading to that end.

We favor the cooperation of the United States and the respective States in plans for the comprehensive treatment of all waterways with a view of coordinating plans for channel improvement with plans for drainage of swamp and overflowed lands, and to this end we favor the appropriation by the Federal Government of sufficient funds to make surveys of such lands, to develop plans for draining the same and to supervise the work of construction.

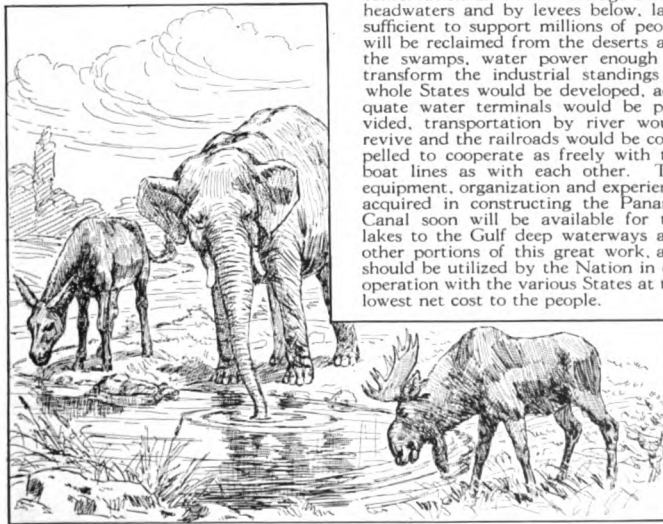
We favor the adoption of a liberal and comprehensive plan for the development and improvement of our inland waterways, with economy and efficiency, so as to permit their navigation by vessels of standard draft.



FROM REPUBLICAN PLATFORM

We favor a liberal and systematic policy for the improvement of our rivers and harbors. Such improvements should be made upon expert information and after a careful comparison of cost and prospective benefits.

The Mississippi River is the Nation's drainage ditch. Its flood waters, gathered from thirty-one States and the Dominion of Canada, constitute an overpowering force which breaks the levees and pours its torrents over many million acres of the richest land in the Union, stopping mails, impeding commerce, and causing great loss of life and property. These floods are national in scope and the disasters they produce seriously affect the general welfare. The States unaided cannot cope with this giant problem. Hence, we believe the Federal Government should assume a fair proportion of the burden of its control so as to prevent the disasters from recurring floods.



FROM PROGRESSIVE PLATFORM

The rivers of the United States are the natural arteries of this continent. We demand that they shall be opened to traffic as indispensable parts of a great nation-wide system of transportation in which the Panama Canal will be the central link, thus enabling the whole interior of the United States to share with the Atlantic and Pacific seaboards in the benefits derived from the canal. It is a national obligation to develop our rivers, and especially the Mississippi and its tributaries, without delay, under a comprehensive general plan covering each river system from its source to its mouth, designed to secure its highest usefulness for navigation, irrigation, domestic supply, water power and the prevention of floods. We pledge our party to the immediate preparation of such a plan, which should be made and carried out in close and friendly cooperation between the Nation, the States and the cities affected. Under such a plan the destructive floods of the Mississippi and other streams, which represent a vast and needless loss to the Nation, would be controlled by forest conservation and water storage at the headwaters and by levees below, land sufficient to support millions of people will be reclaimed from the deserts and the swamps, water power enough to transform the industrial standings of whole States would be developed, adequate water terminals would be provided, transportation by river would revive and the railroads would be compelled to cooperate as freely with the boat lines as with each other. The equipment, organization and experience acquired in constructing the Panama Canal soon will be available for the lakes to the Gulf deep waterways and other portions of this great work, and should be utilized by the Nation in cooperation with the various States at the lowest net cost to the people.

such instances as compared with the whole number of projects undertaken by the Government. Among those most prominently mentioned by critics of waterway improvement are the Illinois and Mississippi Canal, commonly known as the Hennepin Canal, and the Missouri and Mississippi Rivers. But there have been in each case peculiar and local reasons for the failure of the waterway to respond in commercial development to the improvement made, which will doubtless be removed in the future.

The Hennepin Canal was, perhaps, constructed too far in advance of any commercial demand for the same, but it is a substantial structure, easy of maintenance, and will doubtless last for an indefinite period. In the meantime, the country tributary to the canal is developing, farm and other products are increasing, freight tonnage on the waterway is growing—the whole suggesting that in a few years it will meet the hopes and expectations of its designers.

The amount of money spent upon the Missouri River is not large when the length and importance of that stream are considered, but it has not been in condition to develop a commerce in competition with the railroads paralleling its banks, since the work of improvement laid out by the engineers has never been carried to completion. The work has recently been resumed, however, and Congress has expressly determined to complete the project for the lower river—that portion between Kansas City and its mouth—within ten years.

It is hard to believe that the glory of this great waterway has departed, never to return. Traffic is already growing on the upper river, and arrangements have been perfected for the utilization of its lower part, based upon Congressional assurance that the work will be done within the time named. With the completion of existing projects and the growth and development of the country tributary to this great river, there is every reason to hope that a large and important commerce will again seek its waters.

A great deal of money, it is true, has been expended on the Mississippi River, more than on any other stream or waterway in the country, while its commerce has fallen off from that of a few years ago.

But that river has been placed, and properly so, too, in a class by itself. It is navigable for two thousand, four hundred and thirty miles and, with its tributaries, drains forty-one per cent. of our continental domain, while the waters from thirty States are poured into its lower reaches.

The Panama Canal will soon be completed and open to traffic, which should have a stimulating influence upon all the Gulf ports and rivers, and especially upon that great waterway and its magnificent system of tributary streams. These considerations have kept alive a sentiment in favor of its continued improvement by the Federal Government, and that, too, in face of a constantly dwindling commerce. This feeling has recently found expression in the platforms of the great political parties of the country, in which they substantially pledge themselves to continue to final completion the improvements already begun. The Government is even doing there what it is not doing elsewhere—assisting the States and localities in the building of levees—but this work is being done on the theory that it improves the navigable features of the stream, which is doubtless true to a certain extent.

While the work of improvement had been going on for many years without any definite plan for finishing the work, Congress, in the River and Harbor Bill of 1910, embarked upon a plan for the completion of the project for the lower river within a period of eighteen years. Meanwhile, projects for the improvement of the middle and upper sections of the river have been adopted, work upon which is being prosecuted with reasonable speed. Hence, it is safe to say that within fifteen or sixteen years all these projects will have been completed and the work closed, except in so far as the care of the Government may be required for maintenance.

The adoption of a comprehensive plan of development and the standardization of waterways, so far as that is practicable, has been urged as a necessity by some earnest advocates of waterway improvement. The importance of this cannot easily be overestimated, but it should not be forgotten that we are already moving quite rapidly along those lines. True, we have no commission or other appointed body to inaugurate plans for improvement

and carry them to completion, as has been suggested should be done, but we have a system perhaps, just as effective, possibly even more efficient.

More than half a century ago this work was placed under the control of the War Department and its corps of engineers, who are equal in ability and efficiency to those of any other country. Under laws enacted by Congress from time to time an organization of this force has been perfected as capable of dealing with the improvement of our waterways, whether singly, as heretofore, or together under a general plan, as any commission appointed for that purpose, no matter from what field of activity the membership might be taken. The ordering of surveys, of course, has been left to Congress, as is the adoption of projects and the appropriation of money to prosecute the work thereon. But the making of surveys, the working out and submission of plans with estimates of cost, are given to the engineers.

This corps is composed of a chief and a board of five members, known as the Board of Engineers for Rivers and Harbors, located in the city of Washington, and nine division and fifty district engineers, whose jurisdictions cover the entire country, and who are familiar with the rivers and harbors and the necessities of commerce in each and every locality. Surveys, the preparation of plans and the making of estimates are in charge of the district officer who, in the performance of these duties, makes a thorough survey and study of the locality as to cost, feasibility from an engineering standpoint and the advisability of the work, and submits a report, with his recommendations, to the chief through the division engineer in whose division the district is located. He transmits the report, with his views thereon, to the Chief of Engineers, who, in turn, sends it to the Board of Engineers for Rivers and Harbors, where it is again thoroughly considered and returned, with the opinion of the board, to the chief, who then submits the report with his recommendation to the Secretary of War. The Secretary then transmits the whole to Congress, when the project is ready for consideration by that body.

The Chief of Engineers, ranking the entire corps, exercises supervisory powers over their work and can overrule or mod-

ify their recommendations, as he frequently does. The control of each and all projects being practically under one efficient head, the most intelligent direction may be given and, as a matter of fact, is given to the making and execution of plans for the improvement of a waterway so as to produce the best results. Not only have channels been widened and deepened and obstructions removed, but the work in the main has been done so as to make each harmonize with other similar works wherever harmony is necessary.

This has been, or will be, the effect of the improvement of the Mississippi River and its thirteen thousand miles of tributaries. That river has been divided into three parts, consideration being given to natural depth, cost of improvement, tributary streams and commercial demands. A nine-foot low-water depth has been provided from the mouth to the Ohio, which is likewise being improved under a nine-foot project to Pittsburgh. An eight-foot project has been furnished from Cairo to St. Louis, a six-foot project thence to and up the Missouri to Kansas City, and the same in the Mississippi to St. Paul.

This will not only accommodate the commerce from St. Louis downward, and that of the Ohio from Pittsburgh, but the commerce of the Missouri and the upper reaches of the Mississippi as well. The same is true of other waterways, the engineers usually considering the improvement of the main stream with reference to its tributaries and the nearby waters over which its commerce may be floated to points of ultimate distribution.

The people, understanding the commercial necessities in the various communities, really initiate projects by making these necessities known to Congress; while that body, ever responsive to public sentiment, makes provision for the surveys and afterwards provides the money to prosecute the work on the project adopted.

Of course, much remains to be done ere our commercial needs are completely served. This is a great work and to its accomplishment our energies should be directed, for back of it is a sentiment, nation-wide in its extent, which will brook no trifling and tolerate no unnecessary delay on the part of those who legislate for the country.



IN THE MINNESOTA NATIONAL FOREST, AT THE HEADWATERS OF THE MISSISSIPPI

FORESTRY, A FUNDAMENTAL INDUSTRY

By GIFFORD PINCHOT

GIFFORD PINCHOT has been connected with possibly more governmental commissions appointed to investigate scientific questions than any other man in public life today. Having studied forestry in France, Germany, Switzerland and Austria, he began the first systematic forest work undertaken in this country at Biltmore, N. C., in 1892, and in 1898 became the head of the present Forest Service. Mr. Pinchot resigned from the Forest Service in 1910 to prosecute with even greater vigor the campaign for forest conservation and its co-related questions.

FOUR-FIFTHS of the timber in the United States is in private hands. Its preservation depends absolutely upon what the owners choose to do with it. The owner of any part of it may allow his trees to stand uncut; or he may cut them under the prevailing methods of destructive lumbering, or he may consider his timber land as a permanent factory of wood, and apply the principles of forestry. Yet less than two per cent. of the privately held timber lands of the United States are now being conservatively handled. With the threat of a timber famine so clearly before us, we are treating four-fifths of our timber in the way best calculated to bring on that famine as quickly as possible and in the most serious form.

It is not altogether the fault of private timber land owners that they do not practise forestry. To practice forestry is to engage in a manufacturing business, the product of which is wood. No manufacturing business can succeed unless the product will bring more in the market than it costs to produce. In the United States now, the enormous accumulation of raw material, that is, standing timber, which cost us nothing to grow in the first place, is the chief reason why the finished product (lumber, etc.) sells for less than it would cost to grow, harvest and manufacture.

We use in this country 450 feet of lumber a year per inhabitant, as against about 60 feet in Europe. We cut enough lumber every year to make a pile as high as the



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Singer Building in New York and to cover something like 125 acres, and it is worth over one billion dollars. It is our fourth great industry, but it is far more than our fourth great industry. It is the industry upon which, in a very real sense, every other industry reposes. The man who owns a forest, because of the important relation of timber to all other industries, is a public servant. This resource, just as truly as printing is the art

preservative of all arts, is the industry preservative of all other industries, and upon what we do with it depends the prosperity of all the other industries of our country.

Forestry, like any other industry, must become financially attractive before business men will take it up. There must be a reasonable security against forest fires. The present great danger that the investment may go up in smoke, seriously reduces the attractiveness of a long-time investment in growing wood. There must be reasonable taxation, under which there will be a fair chance to make the business pay. The land upon which the trees grow should be taxed annually, but the growing crop itself should be taxed only when it is ripe for cutting. Other crops, like corn, pay but one tax before harvest. Under present methods of taxation, the timber crop may pay fifty or one hundred.

Since we must have lumber, it is clear that the duty to surround the industry of growing wood with such conditions as will make it attractive, rests squarely upon the people of the United States. The penalty for shirking this duty is a famine of one of

the three great raw materials upon which civilization rests: coal, iron and wood.

The great interstate concentration of timber land ownership has made clear the duty of the nation to interfere for the protection of the legitimate interests of us all, lumbermen included. Since the nation owns but a small fraction of the standing timber, and since the wise handling of all of that timber is essential for the future welfare of the country, there remains nothing for the people to do but to accept

over the forests within the boundaries of each state. But the problem of the forests, like the problems of the streams, is by its very nature an interstate affair. It may take long to work it out, but before we are through with it the regulation of the lumber industry in the interest of the public welfare must be and will be accomplished mainly by the nation itself.

There are, then, two principal things to be done. First, the states and the nation must improve the conditions which now



EROSION OF UNWISELY CLEARED SLOPE, WESTERN NORTH CAROLINA

the situation and regulate the handling of private forest land.

There is nothing revolutionary in such a doctrine. Switzerland and France have long ago adopted it. There is obviously no more reason why an individual in the United States should be allowed to handle his own forests in a way to injure the public welfare, than why he should be allowed to use his own property in a city so as to endanger the public health.

I am far from having any quarrel with the fullest exercise of state sovereignty

surround and retard the practice of forestry by private owners. Second, the destruction of our forests by the private owners of timber lands must be stopped. I anticipate with confidence that the lumbermen will give their powerful help in the task, but whether they do or not, the problem is far larger than anything except the nation itself, and the general welfare must control.

The forests supply not only wood but water as well, and one of their most useful functions is the control of streams. Since



THE FOREST RANGER AT WORK

the beginning of this country we have spent \$500,000,000 on our streams, vastly the greater part of it within the last fifty years, and our streams today are less navigable than they were fifty years ago. In other words, this tremendous natural resource, which has within it the power to regulate and control rates of transportation of all kinds; which gives cheaper freight rates than any other agent; which by its use as waterpower takes the place of our vanishing coal fields, of our iron ores,

by furnishing water transportation upon which the prosperity of our cities depends; and which has made rich the whole barren stretches of the desert West, has been neglected, and we have not come to realize it as our most valuable asset. Now the forest has as its second great function the control of our streams, and that is the thing we have been overlooking. Forestry seems to have been left out, and forestry is the one and only solution for the whole problem.



FIRE LANE AFTER SEVERAL ANNUAL MOWINGS, CLINTON, MASS.

A GLANCE AT THE RICHEST VALLEY IN THE WORLD

By BENJAMIN G. HUMPHREYS, M. C.

OVERFLOWING abundance and overwhelming disaster, prosperity and poverty, life and death, tragedy and humor are strangely mingled in this brief article. The problem is both local and national, and it is one for which a solution must be found, if it be not already known. Congressman Humphreys presents a limited panorama of the Mississippi Valley. He is an entertaining writer and a speaker of great force. What he says is well worth attention. He has represented the Third Mississippi District since 1903.

ROLLINS, the great historian, says that it is glory enough for Philip of Macedon that he be known in history as the "Father of Alexander the Great." In like spirit, may not the Mississippi River claim recognition among the rivers of the earth when it can point to the Ohio and Missouri as its tributaries?

Consider one of these, the Ohio, for instance. There are only a few rivers on this earth which actually float a tonnage as large as the Ohio River; and fewer still which serve the commercial needs of so rich and prosperous a valley.

The commission appointed a few years ago to investigate the reservoirs on the tributaries above Pittsburgh, known as the Pittsburgh Flood Commission, stated rather casually in their report that the flood of 1907 destroyed property in the Ohio River Valley, alone, which they estimated at \$100,000,000. Think of a single valley, a valley on one of our tributary streams, where one flood destroys \$100,000,000 in property values, with really no serious or permanent interference with the industrial development or the commercial activities of the people.

When the Iron Chancellor demanded as the price of peace at the end of the Franco-Prussian War that France should pay a war indemnity of a billion dollars, all the world stood aghast at what was believed to be the death-blow to that great nation. Today a spring flood on the Ohio River lays one tenth that sum as tribute upon the people of this single valley, and not a wheel stops turning nor a furnace fire dies.



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There were only a limited number of our people outside that valley who knew at the time what this flood was up to, and they forgot about it as soon as the headline artist turned his attention to another theme.

We are spending, or about to spend, some sixty million dollars to secure a nine-foot depth all the way from Pittsburgh to Cairo in order that the millions of tons of raw material and manufactures

originating in this valley may find reasonable transportation facilities to the markets. The tonnage which originates on the Ohio River is so great that an exact statement of its total is sure to challenge belief. The tonnage created in the Pittsburgh district, alone, exceeds the sum originating at any other three places in the world combined.

It will require sixty million dollars to complete the improvement of the Ohio River from Pittsburgh to Cairo, a distance of a thousand miles. The Manchester Ship Canal in England which cost seventy-five million dollars, is only thirty-five miles long and its annual commerce is less than three million tons. The Clyde was only fifteen inches deep, but at the cost of seventy million dollars it was deepened so as to admit ships from the sea and Glasgow became the second port of Europe.

Pittsburgh, alone, originates more tonnage than Manchester and Glasgow combined, and the improvement of the Ohio River will help not only Pittsburgh, but will give a thousand miles of navigation through one of the world's busiest valleys. Last year, the tonnage of the Ohio River

was about eleven millions, about five times greater than the tonnage of the Manchester Canal.

A few years ago I saw one boat come out of the Ohio, when the rains had given sufficient depth for temporary navigation, towing fifty-eight thousand tons of coal. It would have required fifty locomotives, pulling nineteen hundred cars, to have hauled that load.

No wonder the people of that valley are impatient for the great work of improving this river to be pushed with all possible speed to completion.

MR. HILL AND HIS CLOCK

Mr. J. J. Hill, the great railroad magnate, and withal a most interesting and farseeing statesman, declared some years ago that the "clock had struck" for the Upper Mississippi, by which term we designate that reach of the river above the mouth of the Missouri. Congress refused to accept this diagnosis—or maybe I should say prognosis—at any rate, we had not heard the clock strike and, as so many interests were to be affected thereby, we demanded strict proof.

To take issue with Mr. Hill on the efficiency of any transportation facility requires some assurance, and so Congress set about to investigate the question critically before adopting the more ambitious project then pending for the improvement of the river. Fortunately, the proof seemed to be ample and convincing, and the Upper Mississippi is now under improvement for a six-foot channel.

How was Congress led to this conclusion? Was it proof of politics? Was it to build up commerce or build up fences? Permit me to say this by way of preamble, or prelude, or prologue as you prefer:

I have served on the Committee on Rivers and Harbors for ten years, under Republican and Democratic rule, and I have never seen that Committee include any river and harbor project in their bill as a matter of political favoritism or expediency, or as the result of legislative log-rolling. Every project must be approved and recommended by the Board of Engineers of the United States Army before the Committee will pass it. The Committee must be satisfied that the project is worth the outlay. There is but one way

to persuade their will in such matters, and that is to convince their judgment. And now, having tossed this bouquet to my colleagues of this really great committee, let me proceed.

Some years ago I heard the distinguished gentleman from Minnesota, Ex-Governor Lind, on the floor of the House, ask his colleague, Mr. Davis, "Where will your farmer neighbors and mine land when 'Pillsbury's Best' has ceased to stand for what it now stands for?" And it was agreed that whatever might seriously impair the world market for "Pillsbury's Best" would work disaster to the wheat farmers of Minnesota. All of which is preliminary to the suggestion that this Pillsbury must evidently be a man of some consequence, as we all in fact know him to have been. In testifying before the special committee which was considering the Mississippi River, Mr. Pillsbury said this (and a good many others said the same thing and many other things in addition, but for a "short story" this must suffice):

"We consider the presence of the Mississippi River, and the fact that it is kept in a navigable condition, the great regulator of railroad rates; that the benefits should not be measured by the tonnage as much as by the possibilities of sending the freight by water.

"The amount of flour shipped out of Minneapolis is something enormous (thirteen million barrels). A great deal of this would go by the Mississippi River, unless the railroads maintained the cheapest rate known in the country almost."

Mr. Nelson: "And the Mississippi being there keeps the rates down?"

Mr. Pillsbury: "The fact of the Mississippi being there prevents them from making any combination to maintain excessive rates. The necessity is not so much the amount carried by the steamers as the amount that can be carried."

Railroad rates from the Atlantic seaboard to the Dakotas and the extreme Northwest are made on combinations through St. Paul. That is, the rate to St. Paul, plus the rate thence west. The rate to and from St. Paul, however, is materially lowered by reason of the competition by water routes from Duluth through the lakes. And so it is that the lakes, from Duluth east to the ocean, and the river,

from St. Paul south to the Gulf, regulate railroad rates to cities and shippers many hundred miles from either.

HOW THE DEVIL SHOWED MISSOURI

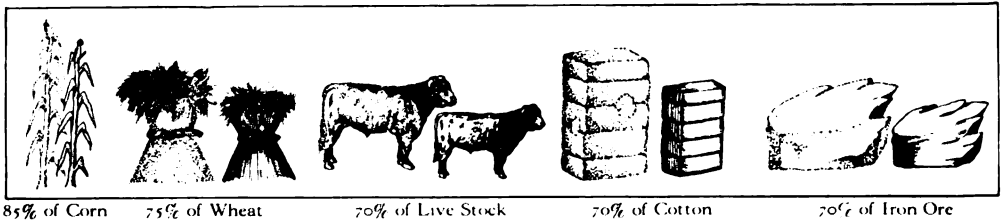
No river in the world has such a tributary as the Missouri. Winding for 2,400 miles through the greatest granary in the world, draining some dozen states, where corn and wheat, hog and hominy enough are produced to fatten the rest of us, it is in many respects the most useful and neglected river of the continent. Sergeant Prentiss, the great Whig orator, once declared in a burst of partisanship that when the Almighty created the Mississippi

Missouri River in the years gone by and were transported to the sea.

What this toll has cost the farmers of Iowa and Nebraska, and their neighbors, cannot be measured, but it has been tremendous. Mr. S. Waters Fox, a civil engineer, who for twenty-five years was employed by the Government on the Missouri River work, places it at 10,400 acres annually in the 807 miles from its mouth to Sioux City.

Still it is argued that this isn't any of Uncle Sam's business at last. But it is. Listen to this! There is but one way to improve the Missouri for navigation, only one way. All of the engineers are agreed on that. Revet the banks and so prevent

OF THE ENTIRE OUTPUT OF THE UNITED STATES



River and the Democratic party he devoted them both to the service of the Devil, and he admitted facetiously "that both had kept the faith."

However some of us may resent this thrust at the Democratic party, the truth is that the Missouri River, which is in fact the Mississippi, has been permitted to so disport itself as to justify no complaint from the Prince of Darkness. It has literally wandered about over the face of the earth like the scriptural lion, seeking whom it might devour.

If you will look at the map, you will see how the Mississippi has brought down acres and acres of soil which, by successive deposits, has gradually encroached upon the sea until many miles of now beautiful farms are stretched along its lower reaches. Engineers tell us that the amount of sediment borne by the Mississippi at its mouth is exactly equal to the amount carried by the Missouri at its mouth; and this is just another way of saying that all the rich plantations along the river below New Orleans, and all those vast swamps of cypress and jungle, caved into the

further caving. What will this cost? Twenty millions from the mouth to Kansas City. Is the game worth the candle?

HOW MUCH IS FIFTEEN BILLION DOLLARS

This is a great valley, this Mississippi Valley. There is nothing like it upon the earth. It equals in area the combined areas of Austria, Germany, Holland, France, Italy, Portugal, Spain, Norway and Great Britain. The annual value of its manufactures had, in 1910, reached the enormous total of seven-and-a-half billion dollars.

Too much to comprehend. We cannot take in just what that means. Let us speak in different terms. What is seven-and-a-half billion dollars? It would equal the total appropriations for the War and Navy Departments from 1861 to 1865, plus the appropriations for these departments in 1808 and 1809 (the period of the Spanish War), plus the appropriations which have been made for all the rivers and all the harbors from the beginning of the Government to date, plus the cost of

the Panama Canal; and even then we would have a balance remaining large enough to pay off the national debt. This is what seven-and-a-half billion dollars amounts to.

But in addition to this, this valley produces 85 % of the corn raised in the United States; 75 % of the wheat; 70 % of the live stock; 70 % of the cotton; 70 % of the iron ore; 70 % of the petroleum; 50 % of the copper; 50 % of the lumber; 50 % of the coal and has 70 % of the farm areas and farm values of this country. The total value of all the products of this valley is fifteen billion dollars annually.

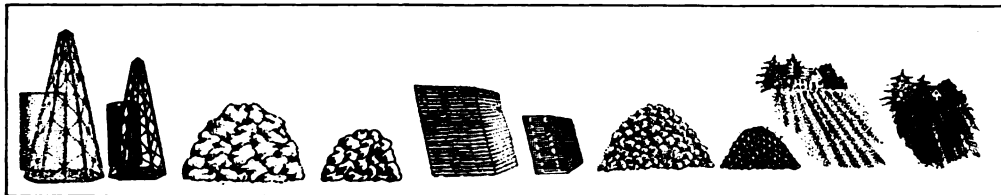
Every pound of this fifteen billion dollars' worth of products is affected by the transportation facilities at hand. There

all related subjects, the late Senator Frye, then Chairman of the Commerce Committee, brought Mr. Wilson directly to the point:

The Chairman: "Well, now, what about the Missouri River? How is that going to help you out? What do you want done about that?"

Mr. Wilson: "As far as the commercial situation is concerned, a transportation line operated on the Missouri River, a waterway carrier being effective, having sufficient capacity to carry—and in fact carrying—a sufficient quantity of tonnage to make that tonnage noticeable to the rail carriers, will exert an influence on the rail lines, forcing them to meet the com-

THE MISSISSIPPI VALLEY PRODUCES



70% of Petroleum 50% of Copper 50% of Lumber 50% of Coal 70% of Farm Areas

are 150,000 miles of railroads in this valley which are trying to transport these products and bring into the valley whatever is needed from the rest of the world in exchange. Can they do it? No, they cannot, but suppose they could, suppose they do.

Mr. H. G. Wilson, for many years an official in the freight traffic department of the Kansas City, Fort Scott & Memphis Railroad, is recognized as one of our most efficient authorities on the subject of transportation rates. In an address before the Rivers and Harbors Committee of Congress two years ago, he stated that railroad rates from the territory known as "seaboard territory" (lying east of Pittsburgh and Buffalo) to points as far west as Galena, Kansas and Denver, Colorado, were all affected by the water transportation of the Mississippi River, and that five million tons of traffic across Missouri points into the southwest were materially lowered by the potential competition furnished by the physical presence of the Missouri River.

After a good deal of cross-questioning on

petition so established, which will result in a lowering of the freight rates, not only to and from Kansas City and the other Southwestern Missouri River points, but to and from all of the trade territories in the Southwest—Kansas, Oklahoma, Texas, Denver, Colorado, New Mexico, Arizona and Nebraska. All of this territory, all of these states, will be benefited by a reduction in the freight rates."

I believe he answered the question.

THE FATHER OF WATERS AND THE PASSOVER

From Cairo, south, the Mississippi traverses the most fertile valley in the world. I use the word "traverses" advisedly. Mr. Webster says traverse means "to cross, to pass over," and that is what this big river does. Last spring it "passed over" some 14,000 square miles of the most productive lands in the world. At one time during this passover the Secretary of War was furnishing food and shelter to 161,000 of our citizens who had been made homeless and helpless by the



FLOOD TIME IN THE MISSISSIPPI VALLEY

flood. How many millions of property values were lost and destroyed nobody knows, and nobody ever will know.

But the loss cannot be measured that way. There were many lives lost, many homes destroyed, many hopes turned to despair. If it were not for its marvelously productive soil, which renders its recuperative powers, therefore, beyond compare, this valley would be abandoned to the wilderness and its denizens. But it is blessed with a gentle climate, the rains fall in season and the sunshine warms into fruitage its abundant crops of corn and cane, and whiten its fields of cotton into waving beauty.

There are twenty-six thousand square miles of these lowlands which, expressed in different terms, means an area larger than Maryland, Delaware, Connecticut, Rhode Island and Massachusetts combined. All of the lower Mississippi is not lowland, subject to overflow, not by any means. There are broad acres of upland and towns and cities, too, high above such danger. Memphis, Vicksburg, Natchez, Baton Rouge are far beyond the reach of the floods, but in this I speak only of the lowlands.

It would be a foolish thing to provide nine feet in the Ohio, and six feet in the upper Mississippi and twelve feet in the Missouri, unless we are to secure and maintain a navigable depth in the Mississippi below their confluence. The present adopted project is for nine feet over the bars, but there are many who are insisting upon "Fourteen Feet Through the Valley." There is but one way to get either. Secure the banks against erosion and confine the waters at all seasons to the channel.

When General Suter, now retired, was a lieutenant-colonel in the Engineer Corps of the Army, he was set to work on this great problem, and after long and diligent study and experiment he reported, as far back as 1890, that the river could not be improved without levees. I quote the Record:

"Senator Gibson: You stated a moment ago, in reply to a question by the Chairman, that if you were improving the Mississippi River, even if it were running through a wilderness, if the country through which it ran were not peopled, you would still build levees on the banks.

"Lieutenant-Colonel Suter: Yes, sir.

"Senator Gibson: Why do you hold that opinion?

"Lieutenant-Colonel Suter: Because I consider that the improvement of the stream for navigable purposes without it is impossible."

But it does not run through a wilderness. The riparian owners of the lower valley have been busy conjuring up different systems of taxation whereby money enough could be taken from their fields to build these levees high enough and strong enough to prevent further disaster from recurring overflows. In this way they have raised and put into these levees some sixty odd million dollars since the close of the Civil War, which left the old levee system totally destroyed. But all through the upper valley there has

been a most rapidly advancing civilization. The peoples of all the world have been attracted there, and the barren prairies and the trackless forests have both been subdued by the energies of man and brought under productive cultivation.

Under the stimulus of scientific study and intelligent experiment the drainage of vast areas has been undertaken. The bends have been cut off in the natural channels, main canals have been dug, the farm undertiled, and now, when the rain falls, instead of lagging superfluous in innumerable slashes and undrained swamps serving as natural reservoirs, it rushes into the tributaries and down the great river, bringing destruction to the farmers of the lower valley. The greatest of all floods, for instance, was the one just passed—1912. Mr. Moore, Chief of the Weather Bureau at Washington, says that this flood was caused by "six rain storms in



WHEN THE LAND LUBBER
GOES TO SEA

the upper valley which fell between March 10 and April 2, a period of three weeks."

These floods thus precipitated upon the lower valley wash away the banks, tumble the levees into the river and verify all that Prentiss said about the river.

Colonel Leach of the Engineer Corps of the Army said before the Senate Committee:

"I may say, generally, with regard to the history of the levee system, that over three-fourths, probably, of the entire sum of money expended by the states in the last ten or fifteen years in the construction of levees would have been saved if the United States had prevented the banks from caving."

Of course the planter in the lower valley does not wish to see the farmer in the upper valley injured by the surplus water which can be carried off by drainage, nor does the farmer in the upper valley at all relish the idea of destroying his brother further down the river by turning this surplus water upon him too precipitately. What they both most earnestly desire is that out of the common treasury of all the people the Congress shall appropriate money enough to so improve the river, which is the nation's drainage ditch, that this surplus water may pass out to sea between permanent leveed banks.

To complete the levee system so as to bring it up to the grade and section believed to be strong enough to do this will require about thirty-five million dollars. There are just about thirty-five million people in the whole valley and they would be very willing to contribute their per capita, 35 cents, annually, for the next three years and that would settle it.

There are fifteen thousand miles of tributaries of this great stream, but I have touched only on those which are most prominent now in the public mind, leaving ten thousand miles of the Arkansas, the Red, the Yazoo, the White and others of less tonnage and national concern.

I fear I have already overstepped the reasonable limitations of a short story. For this I must plead as excuse a lack of time to bring this article to a shorter measure.

Senator Morgan, of Alabama, was once asked how long he could speak on a certain subject. "If I had time to thoroughly digest the subject and prepare my address, I think I could talk for three days," he replied.

"But if you had no such time for preparation, how long could you speak?"

"Oh, indefinitely."

SANTA CLAUS STUCK ON A SAND-BAR

AN EFFECTIVE EMPTY STOCKING ARGUMENT BEFORE THE RIVERS AND HARBORS COMMITTEE, AS RELATED BY CONGRESSMAN HUMPHREYS

"The improvement of our waterways is a matter of business, and appeals to the pockets of men. In dealing with it we are perforce confined largely to a matter of very dry figures. But even in this practical realm, we sometimes emulate Mr. Weller and drop into poetry. A year or two ago we (Rivers and Harbors Committee of the House) were hearing some gentlemen from the valley of the Cumberland, who were anxious to have the project for the improvement of that river pushed to completion. We were listening to the stories of the wealth, latent wealth, in that most wonderfully beautiful and God-favored valley. Somebody said, somewhere, speaking of such a valley, that it was a marvelously possible valley. Well, we were hearing that the Cumberland Valley was marvelously possible when, as I suggested before, we dropped into poetry. Mr. Slaughter was talking, and was in the act of bowing himself out. 'May I make just one further observation?' he asked, almost apologetically. 'Their goods go up the river there, and to give you a pathetic incident as an illustration of the circumstances there, this last Christmas there was no water in the river, and the Christmas presents—the toys which were going up the river to the children all up in that country—were lying on the banks of the river at Nashville, and could not be gotten to them. Imagine what that means!' We did. Every man of us. And in those imaginings we saw the gray dawn of Christmas climb the mountains of East Tennessee and we heard a thousand—yes, ten thousand—little feet slip out of bed and patter across the floor to the hearthstone to see what old Santa had brought. And then we saw the little faces grow pale as they fled from the gaunt spectre of an empty stocking to dry their tears in the bosom of a heart-broken woman. Santa Claus was stuck on a sand-bar! When the next River and Harbor Bill was reported, there was provision for the Upper Cumberland."—*B. G. Humphreys in the Inter-Nation.*

HIGHWAYS TWIN TO WATERWAYS

By J. E. PENNYBACKER, JR.

MR. PENNYBACKER is Secretary of the American Association for Highway Improvement, Editor of the Official "Good Roads Year Book of the United States," and an authority on the subject of road development. In this article he tells of the problems of roads "the first link in the Transportation Trinity," and his conclusions will interest you.

WHILE the effort of improving the main roads of the United States has always been distinct from the effort to deepen the waterways, there is no doubt that the two movements are part of the same economic problem. The idea of the men who are working for a better system of highways, like that of the men who are working for deeper waterways, is to improve the transportation facilities of the United States. It is conceded that transportation by waterways is much cheaper than transportation by way of the earthen roads.

The cost of transportation per mile on an average country road is about 23 cents. When it is realized that the cost of transportation drops to 11½ cents along an improved highway, the great object of the American Association for Highway Improvement and its allied organizations needs no defensive argument. Improved highways will cut the cost of transportation in half, an object certainly worthy of the best efforts of the brains now engaged in the movement.

The cost of railroad transportation per ton per mile is three-quarters of a cent, while on canals and rivers it is from one-third to one-seventh of a cent, and on the ocean three-tenths of a cent. For one dollar it is, therefore, possible to haul one ton about 4 miles by common road, 8 miles by a good road, 130 miles by rail, 300 to 700 miles by canal or inland waterway, and about 3,300 miles on the ocean. In other words, it costs the farmer about \$1.25 more to haul a ton of wheat over the average road from the farm to station, a distance of 9.4 miles—average



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for the United States—than to ship it from New York to Liverpool, a distance of 3,100 miles.

The insufficient road system and the insufficient waterway system are twin problems in the United States. As a matter of fact, the waterways and roads are closely related to all other fundamental problems. Unless there are good roads over which the farmer may haul his crops in all seasons of the year, the railroads must stand virtually idle at certain periods. And unless there are roads by which the farmer may gain access to the piers and wharves of shipping points the freight carriers of the water routes must suffer.

The interior of the country possesses 50,000 miles of waterways, only half of which are navigable. The total mileage of all public roads of the United States is 2,199,645, while the total mileage of all improved public roads is only 190,476. It will thus be seen that the percentage of all roads improved is but 8.66, while it is agreed that 20% will have to be improved to bring about a state of real efficiency.

The trouble with the United States, it is clear, has been due to the mushroom growth of the railroads. The railroads have pushed their way through all sections of the country so fast that they have out-distanced the earthen roads, and the result is that the development of farm lands has not kept pace with the development of the country itself.

In a recent speech before the Atlantic Deeper Waterways Association, John F. Stevens, vice-president of the New York, New Haven and Hartford Railroad, said:

"It must be remembered that within



A LOAD FOR TWO HORSES ON THE MACADAM ROADS NEAR CHARLOTTE, N. C. 12 BALES OF COTTON, 6,000 POUNDS

sixty years—about one hardy business lifetime—our railroad main lines have risen from nothing to 225,000 miles, over which traffic, both freight and passenger, is carried at speeds equal to, and at rates, generally speaking, lower than in most countries where the cost of labor and material is much less than with us, and where density of tonnage is far greater. But a time has now come, has been with us for some years, when the railways considered as a unit are not capable of handling satisfactorily the interchange business of the country, even supplemented as they are to a certain extent by water-lines. And to such lines they should bear the relation of allies instead of opponents, if they now do not.

The farmer must get his crops to market. The railroad does not go to the farmer, so, like Mahomet and the mountain, the farmer must go to the railroad. The only way he can get to the railroad at a minimum cost of hauling is by a good road. If the railroad does not go to him, and there are no adequate roads or waterways, the country round about him must go to waste.

Without wagon roads the value of waterways as avenues of transportation would be exceedingly limited and that of railways even more so. Conversely, the practical value of the wagon road would shrink at an alarming rate if the waterway should be eliminated. It must be quite evident that in this "Trinity of Transportation," as it has been well epitomized, there is an irresistible interdependence.

The traffic on the more than 2,000,000 miles of public road, comprising our

primary means of transportation, is yet in its infancy. The splendid road system of France carries a traffic of more than one and one-third times the railroad traffic.

The reason for the exceptionally heavy traffic on the French roads is the low cost of hauling, averaging lower than ten cents per ton per mile, as compared with an average of about twenty-three cents per ton per mile in the United States. When, by adequate improvement of the public roads, the cost of hauling in this country is lowered to a marked degree, production will be stimulated, population will be better distributed and the cost of living will, of necessity, be lowered, because waste of time and energy, now imposed upon traffic by bad roads, will no longer exist.

Two lines exist along which saving in cost of hauling on the public road may be brought about. One is the improvement of the roadway itself, and the other is in the motive power for hauling. The advent and remarkable improvement of motor vehicles make possible the lowering of the rate of hauling to a basis almost commonplace with railway transportation rates. Experiments in California recently yielded a rate per ton mile of about two cents. This rate could not be expected to be maintained under average conditions, but is indicative of the possibilities along this line.

The important fact which must not be overlooked, however, is that the use of the motor vehicle is dependent largely upon the improvement of the roadway. The possible saving in the cost of hauling may, therefore, be summed up as follows: A rate of from twelve cents to fourteen cents, per ton mile, as compared with twenty-three cents per ton mile through the improvement of the roadway, using for



THE COST OF HAULING ON THIS TYPE OF ROAD IS SO GREAT AS TO CONSUME ALL OF THE PROFIT

traffic purposes animal motive power; a rate of from five cents to ten cents per ton mile as compared with twenty-three cents per ton mile through the improvement of the roadway and the use of motor trucks.

The farmer, in order to meet the wares of his competitor, must first deduct the cost of the production from the selling price, and must depend upon this margin, less the cost of transportation, for his profit. If the cost of hauling is so great as to exceed the margin, his production must cease or be restricted to local requirements.

About fifteen years ago corn was burned for fuel in the Mississippi Valley, because the cost of transporting it to the market was greater than the margin between the cost of production and the selling price. Today, in spite of the enormous crops of every kind of agricultural products, the price of these products to the consumer is about 15 % higher than last year, and this in spite of the fact that reports are continually received of fruit and vegetables rotting in orchards and gardens, because the cost of transportation was greater than the value of the product. The term "over production" does not apply in this case. It should be expressed as "under consumption," due to unequal distribution.

When the railways of America, already constructed, are made accessible to every farm, and when the entire 50,000 miles of inland waterways are made use of by proper improvement and a system of roads as feeders, production should be so great as to satisfy our economic requirements in the most satisfactory manner by lowering the cost of living without sacrifice to the profits of the producer.

The transformation brought about by the substitution of a good road for a bad road in a community is little short of marvelous. First, the value of every acre of land along the road increases. I have never known the increase to be less than 20 %, and I have known it to be as high as 900 %. This increase is due to the fact that the farm can be worked at a profit, and that it is, so to speak, picked up and brought many miles nearer the market.

In Spottsylvania County, Virginia, a bond issue of \$100,000 was expended for road improvement two years ago. The actual sales of farms along one of the roads improved netted a profit of more

than the entire bond issue. The second effect of good roads upon the community is shown in the increase of agricultural activities; waste lands are brought under cultivation; better methods of farming are introduced; labor-saving devices are installed, and instead of importing from other sections of the country farm products for home consumption, the balance of trade soon turns the other way. When a team hauls 4,000 pounds instead of 1,000 pounds; when the bills for repair of wagons and harness and for the upkeep of teams are cut in half, and when hauling can be done every day of the year, the explanation of this increased production is apparent.

The next effect is that of home-building. People leave the isolated under-productive sections and move to the good road, where they are not only more prosperous but have neighbors, and have access to towns and all of the comforts and conveniences of civilization. The effect of the road upon the school is soon apparent. The attendance is better, and after a comprehensive system of roads has been introduced, the little one-room log school-houses are soon supplanted by graded schools, without any increase in expense, because fewer and better schools are no more expensive than many and poorer schools.

A year or so ago a traveler in discussing the good roads question with a local physician in a Georgia town was informed that the rate charged by physicians for country visits was twice as high over the bad road leading to the west of the town as over the good road leading to the east, which meant that families living on the bad road frequently paid in doctors' bills in excess charges over the regular medical fees many times the amount of their road taxes.

The trouble with the road situation in the United States is not so much inadequate appropriations, as unwise expenditures. Last year the total amount expended on roads and bridges in this country reached an aggregate of \$150,000,000. Conservative authorities have figured about \$40,000,000 of this sum to be preventable waste. The reason for this condition is, first, that the road laws of most of the States do not require skilled supervision of road work; second, a multitude of unnecessary officials are intrusted



"THE ADVENT AND REMARKABLE IMPROVEMENT OF MOTOR VEHICLES MAKE POSSIBLE THE LOWERING OF THE RATE OF HAULING TO A BASIS ALMOST COMMONPLACE WITH RAILWAY TRANSPORTATION RATES."

with the control of the public roads, and the result is that all are bosses and few are workers. A third source of waste is in the system of accounting practised in most of the States.

Cost of the upkeep of a road is scarcely ever thought of, the result being that the various units which go to make up a road, such as cost of excavation per cubic yard, of crushing stone per cubic yard, of sprinkling per square yard, of spreading stone per square yard, etc., are almost totally lacking. In Missouri some years ago a newly appointed county engineer found that under the old system the road overseer had contracted for \$125 worth of lumber to build a small bridge. He cancelled the order, and put in a concrete culvert for \$25.

This saving applied to a bond issue running for a period of twenty years would constitute an amount of striking proportions. Bonds should be issued only after careful investigation and upon estimates by capable engineers, showing the specific roads to be improved, the mileage, the cost, the materials available the traffic

actual and potential, the tax levy necessary and the method of bond issue most advantageous to the county or community.

The American Association for Highway Improvement, an organization composed of nearly 1,500 of America's leading citizens, with headquarters in Washington, D. C., is striving earnestly to promote the safe and sane improvement of the public roads, and is constantly urging as a means to this end reforms in road laws and in systems of administration which will eliminate the hindrances which now stand in the way of road improvement. Hon. Logan Waller Page, Director of the United States Office of Public Roads, is President of the Association; Mr. W. C. Brown, President of the New York Central lines, is Vice-President; Mr. W. W. Finley, President of the Southern Railway Company, is Chairman of the Executive Committee; Hon. James S. Harlan, of the Interstate Commerce Commission, is Chairman of the Board of Directors; and Hon. Lee McClung, Treasurer of the United States, is Treasurer of the Association.

THE HOUSTON SHIP CHANNEL

By THOMAS HENRY BALL

HOW a "Navigation District"—composed of the City of Houston and a portion of Harris County, in which Houston is located—went into partnership with "Uncle Sam" to build a ship channel 50 miles long and 25 feet deep, at a cost of \$2,500,000, is interestingly told in the article which follows. Thomas Henry Ball, the writer of the article, represented the Eighth Texas District in Congress for eight years.

THIS waterway project contemplates a channel 25 feet deep and 50 miles long, running from Galveston harbor to a point within the city limits of Houston, where it terminates in a turning basin 800 feet in diameter.

For one-half its length the channel runs through Galveston Bay, and for the other through Buffalo Bayou. This portion of the channel is a landlocked harbor, giving safe shelter from storms, and, being an arm of the sea, it depends on tidewater and not on rainfall for its water supply.

A section of the 12-foot channel made under the project of 1871, which extends from the turning basin at Long Beach to the foot of Main Street in Houston, will be maintained for the use of light-draft boats. The new project for a depth of 25 feet was recommended and the first appropriation for the work was made in 1900. Within the next ten years \$2,500,000 had been appropriated and expended, but the channel was only half completed.

The citizens of Houston and Harris County, being unwilling to wait upon the slow process of dribble appropriations, sent to Washington, in 1910, a committee representing the city, the county and all the commercial bodies, and proposed that, if Congress would authorize a contract for the completion of the work at a cost not to exceed \$2,500,000, the County of Harris and the City of Houston would organize a Navigation District and issue bonds to provide half the amount needed.

Congress accepted this proposal to match dollars with the Government,



which proved the confidence of the citizens of Houston in their own project, and, in the River and Harbor act of June 25, 1910, appropriated \$300,000 and authorized a continuing contract for the completion of the work at a cost not to exceed \$2,500,000, conditioned that the Harris County Ship Channel Navigation District should make provision for furnishing the sum of \$1,250,000 and place to the credit of the Secretary of War

in a United States depository the sum of \$300,000.

Houston and Harris County complied with their part of the proposal, organized the district, issued the bonds, which were taken by the local banking institutions of Houston, made the required deposit, and satisfied the Secretary of War that the balance from the Navigation District had been provided. Thereupon a contract, calling for the completion of the work in about three years, was let for a total cost of \$2,365,791.

When completed, this channel will be a great factor in the commerce of Texas and of the entire country. Houston is the largest railroad center in Texas, having seventeen railroads, which here meet the sea. The principal railway systems have acquired extensive facilities for terminals on the channel, and numbers of persons and corporations have purchased waterfrontage to meet the demands of existing commerce and the largely increased volume which is sure to come.

The City of Houston has 177 acres of land abutting on the turning basin, and has constructed slips and is erecting



THE YACHT "WINDY" FORMERLY OWNED BY GENERAL SANTA ANNA IN THE TURNING BASIN—THE TERMINATION OF THE HOUSTON SHIP CHANNEL.

wharves to accommodate shippers without charge. The city thus has an investment worth more than half a million dollars to guarantee users of the ship channel against excessive port and wharf charges, and it is expected that this progressive action upon the part of the city will compel railway companies to absorb all wharf charges.

At Harrisburg, two miles below the turning basin, extensive improvements are being made in the way of warehouses and cotton compresses which are now in

use and capable of handling a large volume of business. In straightening the channel a number of cut-offs were made, and the bed of the old channel will form at such points valuable storage basins.

Twenty miles from Houston on the ship channel is the scene of the battle of San Jacinto, where the Texas troops under General Houston achieved a signal victory over the Mexican army led in person by General Santa Anna, which eventuated in freeing Texas from Mexican domination and its settled status as a republic, after-



BALD FIELD PARK—TWENTY MILES FROM HOUSTON ON THE SHIP CHANNEL—THE SCENE OF THE BATTLE OF SAN JACINTO



HOUSTON IS THE LARGEST INTERIOR COTTON PORT OF THE WORLD

wards to become the empire state of the Union. This historic spot is included in a tract of several hundred acres owned by the State of Texas and known as Battle-field Park.

Houston is the largest interior cotton port in the world and the ship channel, even in its uncompleted state, carries annually to deep water at Galveston for shipment about 500,000 bales of cotton. The tonnage now handled is valued at forty million dollars annually, which is only an indication of the great volume to come when the channel is ready for sea-going vessels drawing 25 feet of water. A greater depth is only a matter of digging and throwing out dirt, and the great and increasing demand for harbor facilities on the Gulf coast will insure additional depth when needed.

The Houston ship channel improvement is in no sense antagonistic to the great Gulf harbor at Galveston. The expenditure of many millions at Galveston by the National Government has been amply justified by the result. It is estimated that the saving to the grain growers of Kansas and Nebraska alone in one year after the completion of the Galveston

project saved shippers more than the entire amount expended by the Government in securing deep water.

Just across from Galveston, on the main land, Texas City has built extensive terminals, docks and wharves and is handling a large commerce, served by a deep water channel from Texas City to Galveston harbor. At Bolivar, on the opposite main land, the Santa Fe Railway has constructed large terminal facilities, and added to the value of the Galveston harbor as a national improvement.

Thus, with Galveston harbor proper and the splendid facilities already existing there, the use of the Bolivar and Texas City facilities, in connection with the greater Galveston improvement to come; supplemented by the Houston Ship Channel which, after entering Buffalo Bayou, has 25 miles on either bank of opportunity for commercial facilities, we shall have on the Gulf coast to accommodate the vast commerce of Texas and the section west of the Mississippi River, harbor, dock, wharf and terminal facilities unequalled elsewhere in the United States, with the possible exception of the great harbor of New York.

SIDE LIGHTS ON MEN AND THINGS



AT THE HEAD OF THE NEWLY CREATED AND BIGGEST DEPARTMENT OF THE ARMY

FROM a cadet at West Point to a major general of the staff in thirty-two years is "going some." But that is what Major General James B. Aleshire has achieved since his graduation from the Military Academy in 1880. And General Aleshire is now at the head of the newly-created and biggest department of the Army, to be known as "The Quartermaster Corps," comprising the Quartermaster's, the Subsistence and Pay Departments, and he will have associated with him as his assistants Brig. Gen. Henry G. Sharpe, now Commissary General, and Brig. Gen. Geo. R. Smith, now Paymaster General. This biggest department of the Army will disburse in 1914 eighty-five of the ninety-five millions appropriated for the maintenance of the Army, which is also "going some."

What a class that Class of '80 was, to be sure! From the time it entered the Army's alma mater in April, 1876, to the

day of graduation, the Class of '80 made history for the institution and for itself.

It was "Hip! hip! hurrah, boys!" from reveille to taps, and the scraps and the hazings, the courts of inquiry, the demerits and the dismissals crowded fast on each other until rumor said that the Class of '80 would not be permitted to graduate.

But the Class of '80 did graduate and today it stands in the forefront of the classes in personnel and accepted ability. In addition to General Aleshire, Col. George W. Goethals, the builder of the Panama Canal, graduated second in the Class of '80. Others in this notable company are Brig. Gen. H. G. Sharpe, Col. Samuel W. Dunning of the Adjutant General's Department, Col. John L. Chamberlain of the Inspector General's Department, Capt. George Converse, retired, who lost an eye in his first Indian engagement; Charles E. Hewett, who resigned on graduation; Col. J. Y. F. Blake, who died a few years ago and one of the adventurous characters of the class, and two score or more splendid soldiers who have been bringing distinction to the institution on the banks of the Hudson, and incidentally to the uniforms they wear.

Major General James B. Aleshire was appointed to the Military Academy by Col. John L. Vance, then a representative in Congress from the Seventeenth Congressional District of Ohio, now president of the Ohio Valley Improvement Association and one of the directors of the National Rivers and Harbors Congress. General Aleshire was born in Gallipolis, Ohio, his father being interested in flouring mills, and it was in connection with his father's vocation that Aleshire learned the rudiments of business which have since proved of incalculable benefit to him.

Major General C. F. Humphrey, his immediate predecessor in the Quartermaster's Department, in asking for officers to assist him in the conduct of the Quartermaster's Department in China during the Boxer troubles, cabled to the War Department: "Want Aleshire and men like him," and Aleshire has made good in every branch of the Army since his salad days as a second lieutenant.

IN AND ABOUT WASHINGTON

C. SNYDER

"I'll put a girdle 'round about the earth in forty minutes." And Puck meant every word he said, as he airily left Oberon's presence to go in search of the flower, "the price of which on sleeping eyelids laid" would enslave the world.

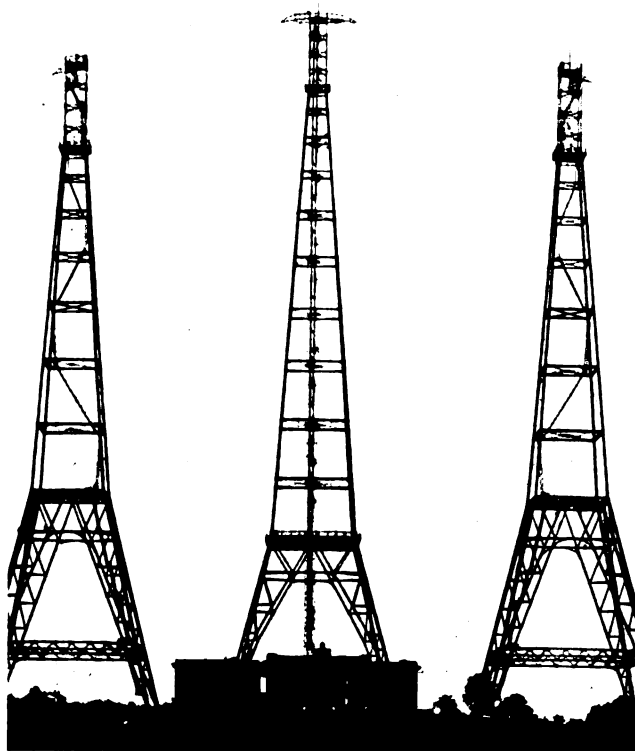
It is a far cry from the "girdle" with which Puck encompassed the globe to the wireless, which is the last word in radio-communication and which, it is believed, reached its highest development with the opening of the new radio station on the heights of Arlington, across the historic Potomac from the Nation's Capital.

This station, which has just been completed, and which cost in the neighborhood of \$250,000, is the first of a chain of wireless plants which the United States Navy Department has in contemplation, and which is planned upon a more extensive scale than any similar system in existence or contemplated by any other nation.

Two oceans and a continent will be embraced within the range of the contemplated chain, making it possible to communicate with naval vessels, whether near the African Coast or in Chinese waters, as readily as the telegraph brings the ships, lying in the roadstead off Old Point or off Provincetown, Mass., in touch with the powers in Washington.

The others to be built will be on the Panama Canal Zone; San Francisco, Cal.; Pearl Harbor, Hawaii; Tutuila Island in the Samoan group; Guam; and Luzon, Philippine Islands.

Each of these stations is planned to have a sending radius of 3,000 miles, although it is confidently believed by Rear Admiral Hutch I. Cone, Chief of the



WIRELESS STATION, ARLINGTON, VA.

These towers form important links in Uncle Sam's girdle around the world; the central tower is 600 ft. high. This station cost \$250,000.

Bureau of Steam Engineering, that the sending radius will be considerably more.

The Arlington station consists of three steel towers arranged in the form of an isosceles triangle, with the powerhouse facing the tallest tower. At the apex of the triangle is a tower 600 feet high, 215 feet higher than the Washington monument counting from the sea level. At the base of the triangle are two towers, each 450 feet in height. The antennae are strung from the tallest tower to the other two. This arrangement gives the maximum spread and takes the fullest advantage of the tallest tower.

On October 28, this powerful station made its first test and its herculean, though invisible, waves drowned out the impulses from all other sending stations and demanded the right of way.



Gettysburg speech

Lincoln Statue

LINCOLN
MEMORIAL

Birdseye
model

Monument from Portico



THE MASSIVE HEAD OF ABRAHAM LINCOLN

By GUTZON BORGLUM

Rotunda of National Capitol

On the opposite page are shown the architect's drawings of the Lincoln Memorial, as designed by Henry Bacon, of New York, which has just been accepted by the Lincoln Memorial Commission and for which Congress appropriated \$2,000,000. This Memorial will be a monumental structure standing on an eminence raised in the beautiful park along the Potomac at Washington. It will typify in allegory Lincoln's qualities, Charity, Patience, Intelligence, Patriotism and Devotion to High Ideals. The most important object of the Memorial will be the statue of Lincoln, placed in the center, reflecting in its isolation the gentleness, power and intelligence of the man.

VIEWS & REVIEWS

IT IS probable that the strongest impression concerning the Panama Canal which exists in the mind of the average American relates to its bigness. It undoubtedly is a big thing. Both as to physical magnitude and cost of construction it is the greatest engineering enterprise of history, but the truth is that the bigness of the Canal is the smallest thing about it. The really big things about the Canal are the changes which its construction and operation are certain to produce, changes which will affect many forms of human activity and reach out, some to the ends of the earth, and some to the end of time. Think, for instance, of the changes it will make in vessel routes and the saving in distance, time and cost of transportation compared with those now used. San Francisco will find New York almost a next-door neighbor, and Liverpool and Hamburg will be just around the corner. Some cities, thriving now, will find their docks deserted, while lonely islands, which have slept in silence through all the centuries of the past, will wake to find their reef-rimmed harbors ports of call upon the busy trade routes of the world.

The work of Colonel Gorgas and his assistants, which has changed the Isthmus from a pest hole to a health resort with one of the lowest death rates on earth, is bound to have a far-reaching influence. It is not too much to say that without their work the building of the Canal would have been impossible. But if flies and mosquitoes can be exterminated in the Canal Zone the same thing can be done in the United States—and with them would go the diseases they transmit. Some of the cities of tropical America are already arranging for thorough sanitation, notably Guayaquil, long known as one of the filthiest spots on earth. Other cities will do the same thing, either voluntarily or through the rigid quarantine enforced at the Canal. Sanitation has transformed not only the cities of Panama and Colon but the whole Canal Zone, and now we know that great regions, long considered uninhabitable, can be reclaimed and furnish food for multiplied millions of population.

World's records for rapid and efficient work have been broken more than once and in more than one line on the Canal, and these new records have been made, not in the cool, invigorating climate of the North but under a blazing tropical sun and amid the downpour of torrential rains. Nor have these results been accomplished by the driving of brutal taskmasters or the exploitation of labor. On the contrary the canal employees have been better paid, better housed, better fed, better treated in every way than any other body of workers in the world. Labor is something more than a commodity and employees are entitled to more consideration than sacks of cement or steam shovels. It has been recognized on the Isthmus that the workers are human beings and they have been treated as such, and they have made records for speed, efficiency and economy because they were filled with enthusiasm for their work and were physically and mentally fit for the tasks they had to do.

In many ways the Panama Canal is an epoch-making work, and the beginning of the new epoch will date from October 23, 1913, for on that day Colonel Goethals promises to take a United States battleship—which should be none other than the *Oregon*—and put it through from ocean to ocean. Strangely enough most of the rest of the world seems to have a keener realization of this great event, and of the opportunities it will afford, than do the people of the United States whose money has made it possible. It seems probable that for the first ten, perhaps for the first twenty or twenty-five, years after the Canal is opened the greater part of the commerce that will pass through it will be financed by foreign capital, transported in foreign ships and carried to and from foreign, rather than American, ports.

We can never get the fullest possible benefit from the building of the Panama Canal until the rivers and harbors of our own country are completely improved and adequately equipped. All the principal ones, at least, should have been made ready by the time the Canal is opened. That is now impossible but the work should be done as soon as it is possible. The great ports of Europe are adding largely to their facilities, already far superior to ours, and Director-General Barrett of the Pan-American Union says that some of the countries of South America are doing far more in this direction than we are.

Work on the Canal is going forward with extraordinary swiftness while on most of the waterways of the United States it is proceeding very slowly, although Army Engineers are in charge in both cases. The reason for the different rate of progress, as Colonel Sibert points out elsewhere in these pages, lies in the fact that in one case all the funds required are provided as fast as they can be used, while in the other dependence must be placed on piecemeal appropriations.

An incident which indicates the benefits which will result when the Canal is opened and our own waterways are given dependable channels occurred a few months ago. A shipment of goods, composed partly of barley and partly of canned fruits, was taken from San Francisco to Panama, transferred from ship to train and hauled across the Isthmus to Colon, transferred from the train to another ship and carried to New Orleans and there transferred a third time to a barge in which it was taken up the Mississippi to St. Louis. Even with all these intermediate rehandlings the freight on this single barge-load of goods was \$2,000 less than it would have cost to send it from San Francisco to St. Louis by rail.

THE British Government claims that the provision of the Panama Canal Act which exempts the coastwise commerce of the United States from the payment of tolls is a violation of Section 1 of Article III of the Hay-Pauncefote treaty, which reads: "The Canal shall be free and open to the vessels of commerce and of war of all nations observing these rules, on terms of entire equality, so that there shall be no discrimination against any such nation, or its citizens or subjects, in respect of the conditions or charges of traffic, or otherwise. Such conditions and charges of traffic shall be just and equitable."

The Question of Tolls

It would seem to be sufficient to point out that the coastwise commerce of the United States is a purely domestic matter, with which other governments have no proper concern, and that foreign ships are prohibited by law from engaging therein. Up to the present time Great Britain has confined her protest to the one point named, but it will be interesting to watch the further development of her case. Will she claim the right, when the Canal is open, to engage in the coastwise commerce of the United States, because, otherwise, her ships would not be on "terms of entire equality" with those of this country?

And what about our warships? If the British interpretation of the treaty is correct, American ships of war must pay the same tolls as those of other nations. But to take the money out of the naval fund and put it back into the canal fund, or the general fund, would be an evasion, a subterfuge and a farce. The spirit of the treaty—under the British interpretation—would require that the passage of our warships should cost us as much as other nations pay for theirs.

One way to accomplish this would be to burn up the money received as tolls, or, if it were paid in coin, take it beyond the three-mile limit and drop it into the depths of the sea. No doubt Great Britain would be entirely satisfied if we paid the tolls for the passage of American warships through our American Canal into the British treasury—but there are some doubts whether such an arrangement would be entirely satisfactory to the American people.

SECTION 11 of the Panama Canal Act is the most dynamic piece of transportation legislation which has been enacted since the passage of the Interstate Commerce law. Much has been said in certain quarters about the falling off of traffic on our rivers, but there is no mystery as to the reason for this result—at least to Colonel *An Epoch-Making Law* Goethals, who says: "Three times while I was in charge of improvements on the Tennessee River I saw steamboat lines start, develop a good traffic—and presently go out of business. Each time I found that railroads had bought them out to destroy their competition." After July 1, 1914, that sort of thing will not be so common, for railroad ownership or control, in any degree or by any method, of competing boat lines is prohibited. That same dynamic Section 11 gives the Interstate Commerce Commission power to order railroads to construct tracks to the docks of water carriers and to determine the terms on which they shall be operated; to establish through routes and maximum joint rates between rail and water lines and determine all the terms and conditions under which such joint traffic shall be handled; to establish maximum proportional rates by rail to and from ports to or from which traffic is carried by water; and to require railways to give equal facilities to all steamship lines.

The day of destructive competition between railways and waterways is done; the day of constructive cooperation has dawned.

There is already apparent the promise, or rather the certainty, of a speedy renaissance of water transportation. Kansas City had faith enough three or four years ago to subscribe \$1,250,000 for the establishment of a boat line and already has steamers and barges in operation. St. Louis has

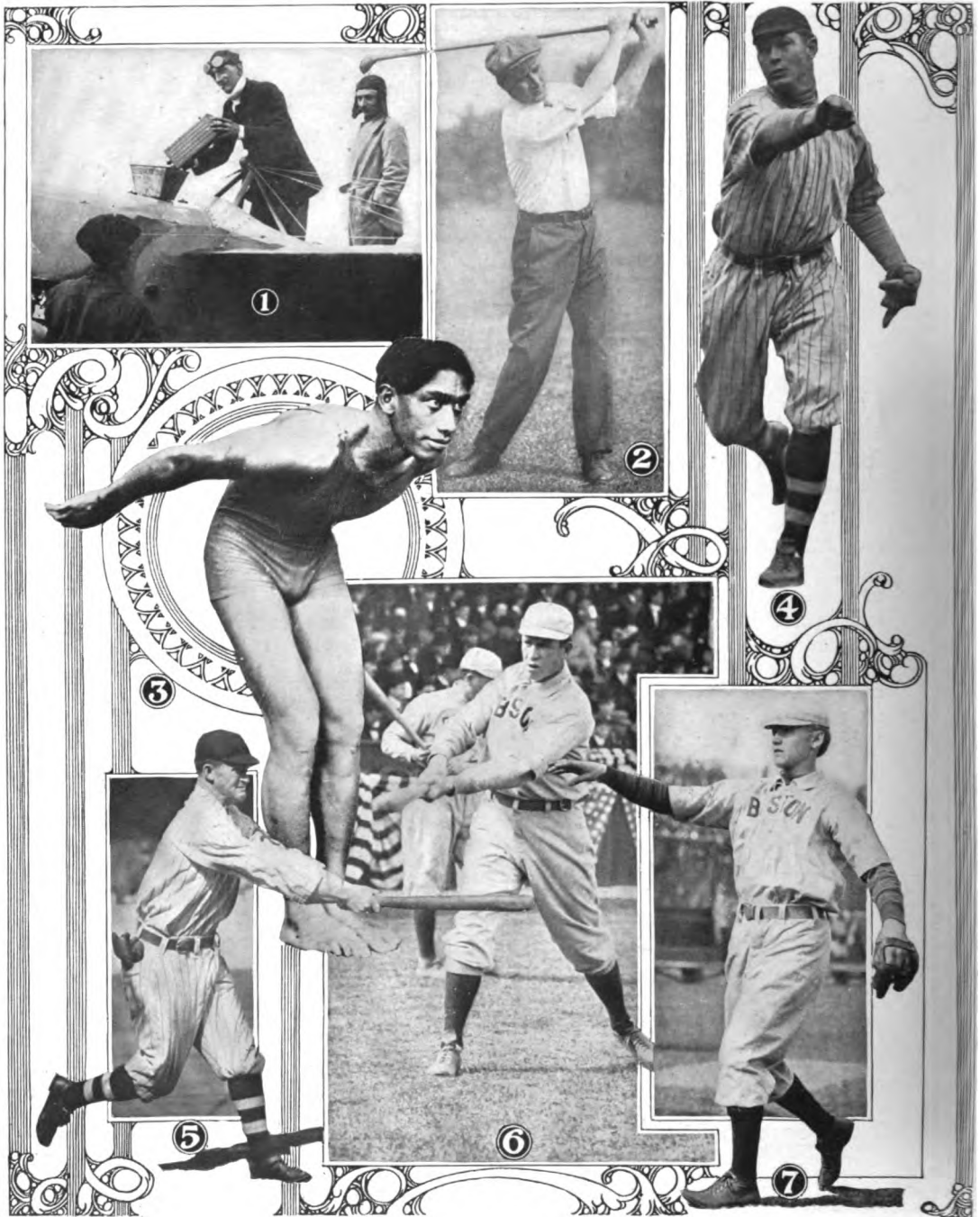
organized a company for the same purpose and Pittsburgh and St. Paul are planning to follow her example. New life has been given the boat line operating on the Columbia and Snake Rivers and fifteen self-propelling steel barges have been ordered to ply between the Black Warrior coal basin in Alabama and New Orleans through Black Warrior, Tombigbee and Mobile Rivers, Mississippi Sound and Lake Borgne Canal.

IT IS unfortunate that practically all the railway journals and many railway men are shortsighted enough to oppose the improvement of waterways and the development of water transportation. But it is encouraging to note the increasing number of prominent railway officials who are broadminded and farsighted enough to recognize the fact that the development and use of waterways, and of good roads as well, is a benefit and not an injury to railways, and that the country needs all the transportation facilities it can get. The motor truck on one hand and the steamboat on the other will give to the railway far more traffic than they take away.

The crying need for more transportation facilities is shown by the car shortage which is already in evidence and bids fair to reproduce the disastrous conditions of 1906-7. Already we hear of coal mines which work only two days a week because they cannot get cars in which to ship their product, while great cities view the approach of winter with dismay because they cannot get sufficient fuel for their needs. The railways are prepared to handle a far larger traffic than they were six years ago, but the productive capacity of the country is so enormous that it continually outruns all extension of railway facilities. We can attain the completest possible utilization of our natural resources and maintain the highest and most permanent prosperity only by the development and coordination of the whole "Transportation Trinity," the highway, the railway and the waterway.

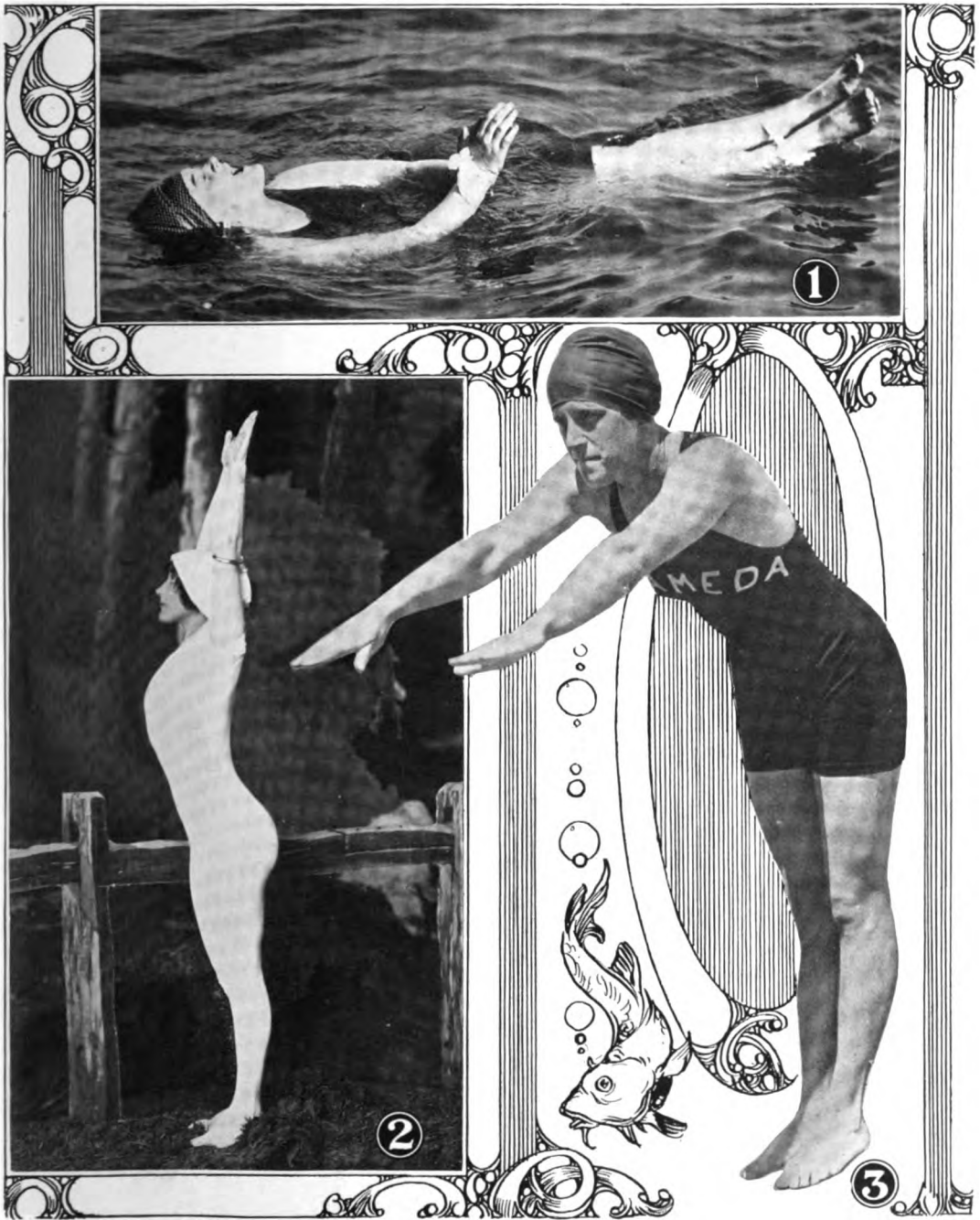
MOST of the waterway associations which advocate particular projects have held their annual conventions—the Atlantic Deeper Waterways Association at New London, Conn.; the New York State Waterways Association in Watertown, N. Y.; the Lakes-to-the-Gulf Deep Waterway Association in Little Rock, Ark.; the Mississippi-to-Atlantic Waterway Association in Albany, Ga.; the Upper Mississippi River Improvement Association at Burlington, Iowa; and the Snake and Columbia River Association in Lewiston, Idaho. The attendance and enthusiasm reported at all these conventions indicates a gratifying growth of appreciation of the importance of the transportation question and a determination to secure the utilization of our waterways. The convention of the Ohio Valley Improvement Association is to be held in Cairo, Ill., November 14th and 15th.

The Ninth Convention of the National Rivers and Harbors Congress, which advocates, not a project, but a national policy regarding waterways, will meet in the New Willard Hotel, Washington, D. C., on the 4th, 5th and 6th of December. President Taft will make the opening address. A most instructive and interesting program has been arranged and a record-breaking attendance is expected.



A FEW CHAMPIONS OF 1912

- 1 French Aviator Legagneux, who made a record for altitude by going up 18,635 feet.
- 2 Jerome D. Travers, again Amateur Golf Champion of the United States.
- 3 Duke Kahananoku, the Hawaiian who represented the United States in the swimming events at the Olympic Games and made the record for short-distance swimming in a 100-meter swim—one minute, two and three-fifths seconds.
- 4 Tesreau, one of the leading pitchers of the National League.
- 5 Murray, who redeemed himself in the 1912 World's Series.
- 6 Tris Speaker, the heavy hitter of the Red Sox.
- 7 Wood, champion pitcher of the American League.

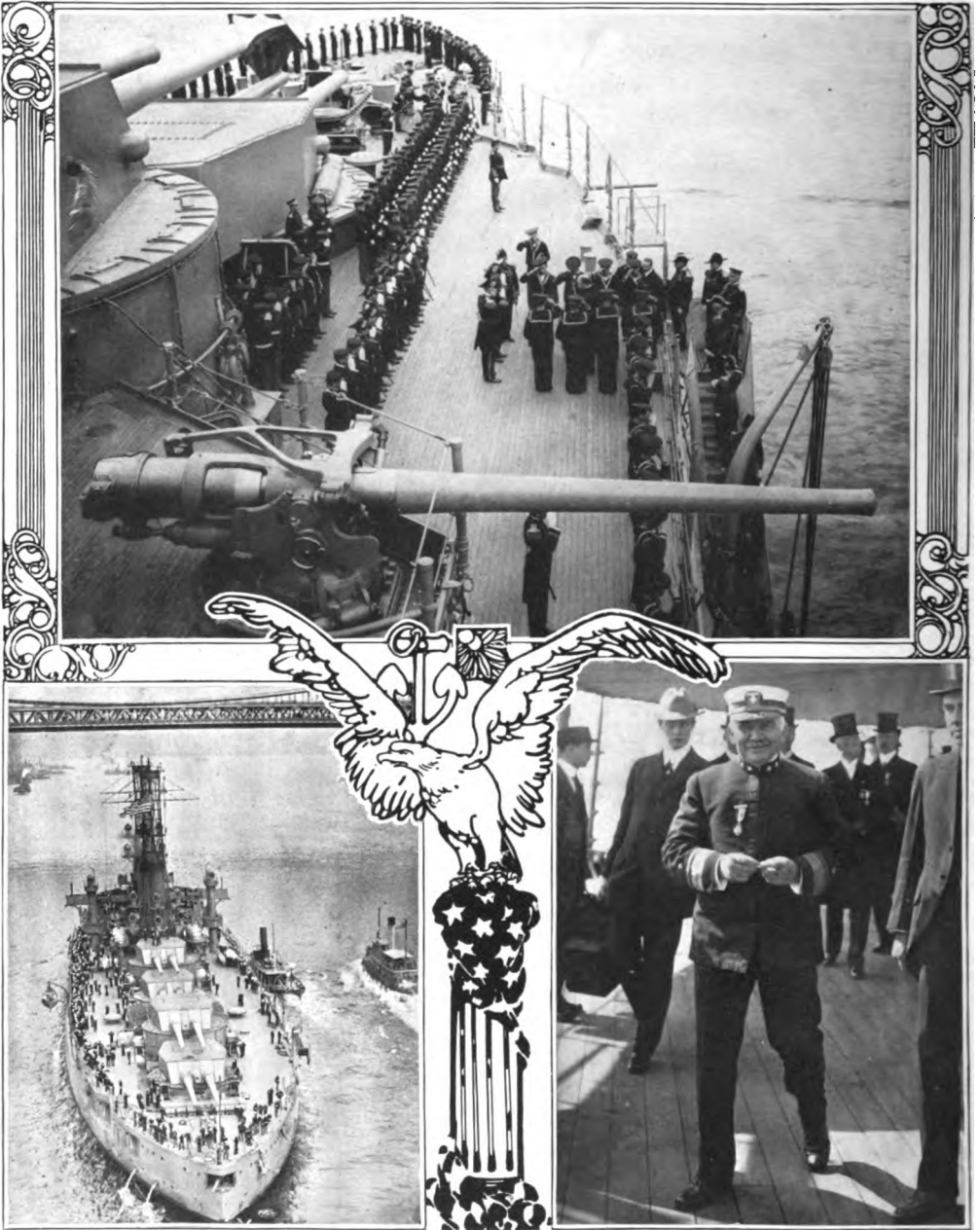


MODERN MERMAIDS

1 MISS KATHERINE WALLACE, WHO RECENTLY SWAM ACROSS THE DELAWARE RIVER AT PHILADELPHIA WITH HANDS AND FEET TIED

2 MISS ANNETTE KELLERMAN, THE FAMOUS SWIMMER AND DANCER

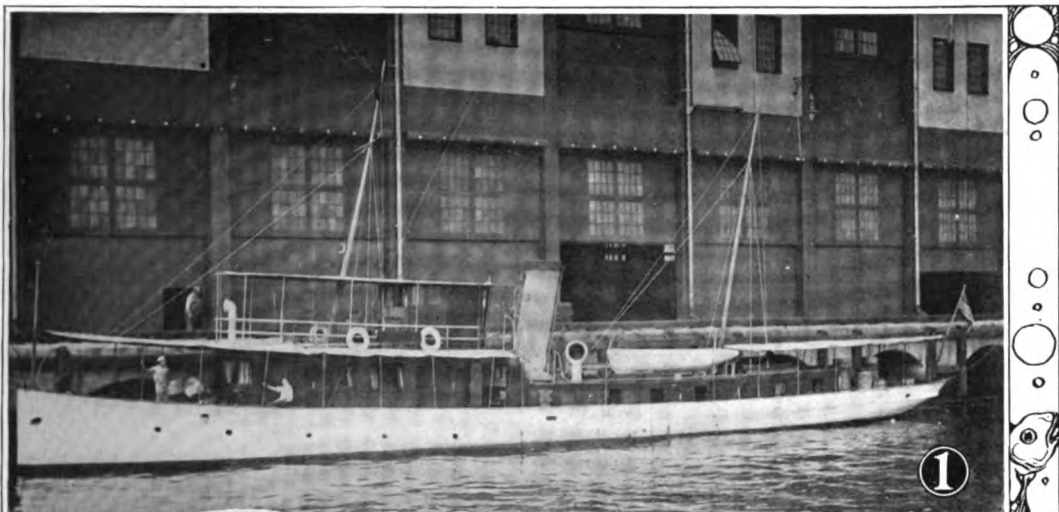
3 MISS NELLIE SCHMIDT, THE FIRST WOMAN TO SWIM ACROSS SAN FRANCISCO BAY



INCIDENTS OF NAVAL REVIEW

WHEN OUR FIGHTING CRAFT WERE REVIEWED BY PRESIDENT TAFT AND SECRETARY OF NAVY GEORGE VON L. MEYER, HELD RECENTLY AT NEW YORK

The picture at the top, taken from the "crow's nest" of the superdreadnought *Arkansas*, shows the President and Secretary of the Navy just coming aboard. This group also shows the *Wyoming*, which battleship and the *Arkansas* are our greatest fighting machines. The other picture is of Rear-Admiral Hugo Osterhaus coming forward to greet the entertainment committee aboard the U. S. S. *Connecticut*.



AQUATIC NOVELTIES

- 1 The S. S. *Bratton*, used at Philadelphia to exterminate rats on ships which come from ports infested with the bubonic plague. The method used is to pump an oxygen-expelling gas into the ships' hold, which suffocates the rats and their parasites, the bubonic flea, the bite of which is said to spread the disease.
- 2 Dutch sand flier. Remarkable speeds are attained by these queer craft.
- 3 The Diesel motor engine, using crude petroleum under tremendous pressure, is attracting world-wide attention. The picture is of S. S. *Christian*, the first motor-propelled liner to cross the ocean. Note absence of funnels.
- 4 J. W. Ingham, of the Benham Boat Club of Philadelphia, taking a 25-foot waterfall in a frail canoe. He attempted to repeat the stunt, but the police prevented.



DIFFERENT PERIODS OF TRANSPORTATION
ILLUSTRATED AT WAR GOVERNORS' CELEBRATION RECENTLY HELD AT PITTSBURGH
Note Costumes of the periods.

THE SOUTHERN PORTS' PREPARATION FOR PANAMA

By AGNES C. LAUT

YOU will not go far in this article before you realize that the author has a first-hand knowledge of the facts as well as a most interesting way of presenting them. Miss Laut is a Canadian by birth and was an editorial writer of note before she entered the broader field of magazine work, in which she is now so prominent. Miss Laut is the author of "Lords of the North," "The Heralds of the Empire," "Story of the Trapper," and "Vikings of the Pacific," etc.

THERE'S a curious game of chess—chess with a handicap—going on among all the ports of the South in their preparations for Panama. But five years ago, a great railroad man of the North referred to the Canal as a possible "frog pond for lily pads." Yet that same man's railroad system has within the past five years bought terminals and connecting lines into Houston, into New Orleans, into Mobile; and when I was in Pensacola, his agents were then looking over the situation because—as one of them explained—they had found that they could ship Pacific Coast produce to Atlantic Coast ports via Panama Canal to the Gulf of Mexico, and from ports on the Gulf of Mexico inland by rail to Atlantic points, and still save four cents a hundred-weight on the all-rail transcontinental rate.

Within five years, seventeen railroad systems have come down to Houston. As many again have focused at New Orleans. Five big systems have centered at Mobile; and three new systems are planning and heading for Pensacola.

Heretofore, American railroad systems have pointed East and West, with laterals North and South to draw transportation into the main current of the transcontinental systems East and West. Today, the railroad systems are pointing North and South—North to drain Canadian traffic, South to direct Middle West traffic to seaboard by way of the Gulf. Why?

Only yesterday, the policy of the railroads was to monopolize all terminals and



bar out all steamships, but those controlled by their own system. Today, Houston has its own belt line terminal system giving equal favors to all comers—rail or ship. New Orleans has spent close on twenty-five million dollars to put all railroads and all ships on an equal footing in her harbor. Mobile has fought out in the courts whether railroads can bar out independent ships by extra charges concealed in "switching;" and

Pensacola has practically secured three-fourths of her harbor front free from all but civic control. Why?

Go up the South coast, even as far as Norfolk, and you will find the same stirring of public sentiment, public hope, in anticipation of Panama. The biggest importer of lumber in Norfolk told me that it cost 12 to 15 cents a hundred-weight, including handling at both ends, to ship lumber 3,500 miles to European ports. To bring that lumber diagonally across the continent from Washington to Norfolk (the South has reached the era when it must import lumber) cost 85 cents per hundred-weight. By way of Panama, that lumber was to be laid down at Norfolk at 20 cents; 16 cents more would send it back inland as far as the Mississippi; so that on the transcontinental rate alone, Middle West States would save on that lumber from 65 cents to 47 cents.

Go up as far as Montreal or Vancouver, and you will find the same stirring of the waters. Vancouver is 600 miles plus from the wheat fields of the Canadian Northwest. Montreal is 2300 miles plus from



NEW ORLEANS, WHICH IS NOW THE SECOND PORT OF THE UNITED STATES, OWNS HER OWN DOCKS AND TERMINAL FACILITIES, INCLUDING A BELT LINE RAILWAY

the wheat fields of the Canadian Northwest. What Vancouver asks herself is—if the water rates on grain are as one to three, or one to ten, compared to rail—why should that grain of the Canadian Northwest not go to Liverpool by way of Vancouver and Panama? Portland is asking and acting on the same question. So are the Southern ports in relation to the wheat fields of the Middle West.

And the answer to the Southern ports is the same as the answer to Vancouver—the rates South and West are not proportionately the same for distance to the Pacific and the Gulf as they are to the St. Lawrence and the Atlantic. Take Houston and Vancouver as two examples! These

ports point out that the rate on 1000 miles for grain from Chicago to New York is 10 cents, compared to the rate from New York to Liverpool for 3000 miles of as low as 3 cents and not higher than 5 cents. Houston is 720 miles from the grain fields, compared to New York's 1335 miles. Vancouver is 600 miles from the grain fields, compared to Montreal's 2300 miles. Why shouldn't Houston and Vancouver get the grain trade? The answer is—rates.

First and foremost, Vancouver and Houston have no elevators. Grain without elevators costs 5 to 8 cents a bushel extra in sacking and handling. Now Montreal and New York and Baltimore and Philadelphia have the most nearly perfect



"PENSACOLA HAS PRACTICALLY SECURED THREE-FOURTHS OF HER HARBOR FRONT FREE FROM ALL BUT CIVIC CONTROL"

systems for cheap, quick handling in the world. Grain at Montreal does not need to be sacked. Each of four automatic conveyors can handle 15,000 bushels in an hour, or all together load 60,000 bushels in an hour; and this at a cost of only $\frac{1}{4}$ of a cent in, and $\frac{1}{4}$ of a cent out.

Montreal can operate 14 different ships in berth at a time, owns her own trackage, and charges only what will meet disbursements. Montreal has borrowed ten million dollars from the Dominion Government at a low rate of interest to improve her harbor, and there has probably been spent in the improvement of the St. Lawrence not less than forty millions, and something over ninety millions on her canal system feeding St. Lawrence traffic. At least one hundred millions have gone to the improvement of New York Harbor. To the argument of distance, presented by the Western and Southern ports, the Atlantic ports at once answer "rates."

How about rates? What they will be in the future no man can tell. It is a game of chess—chess with a handicap. From Calgary to the Great Lakes, the rate runs from $22\frac{1}{2}$ cents to 25 cents. Add 5 cents for forwarding down the Lakes to seaboard, and a rate across the Atlantic varying with seasons and insurance—Calgary grain can reach Liverpool for 40 to 50 cents. Now, how about Vancouver? Compared to the 25-cent rate to the Lakes, or 30-cent rate to Montreal (though this means 40 when navigation closes and the route is all-rail) for the 600 miles to Vancouver, the rate is $22\frac{1}{2}$ to 25 cents, plus sacking, plus ocean rate by tramp carrier. That is—under most favorable conditions, it is more expensive to send the grain to seaboard 600 miles than to the Lakes, 1200 miles.

How about Houston? Average the grain rates for the Middle West, Kansas, Nebraska, etc., to Houston, and they come from 30 to 35 cents. The distance is 720 miles. Average the grain rates for Chicago to New York—10 cents. The distance is 900 to 1000 miles according to the road. That is the Southern ports are suffering a handicap of 3 to 1.

In spite of all this, the Southern ports are spending millions in anticipation of the opening of Panama—digging canals, putting in independent terminals, building sky-scrapers, establishing independent

steamship lines, doubling and trebling in population and business and prosperity. Why?

First: Because, though man-made rates may dam and obstruct traffic, they can't stop it. Sooner or later, it will find its way to the sea by the line of least resistance—the shortest route.

Because, in the second place, if the merchantmen of the world, or even one-half the merchantmen of the world, traverse the ocean highways of world traffic through Panama, they are going to call at Southern ports for backward bound cargoes—cotton for the Orient to mix with the lower India grades; flour for China; steel for Japan; lumber, beef, oil, steel, grain, flour for Europe. They are going to give Southern ports independent lines of steamships. They are going to give them competing (not *pooled*) rates. In fact, so keen are some Southern ports for independent lines, that three independent lines have been established by the ports themselves.

Last, but possibly most important, South America, Central America, Mexico are just awakening. Their trade is worth billions. At present, nine-tenths of it goes to Europe. Why should it not come to Southern ports? Half of South America is a coal-less, steel-less land. Why could not Alabama and Texas and Mississippi points ship steel and coal to South America and take in return the rare hard woods and fruits of the tropics? The way this feature of expectations is being worked up is a story in itself. It need scarcely be told here that it is shorter and cheaper as 1 to 10 to ship into the vast interior of South America through Panama and back by the West coast, than round the great bend of Brazil and in by the East coast.

What are the ports of the South doing in anticipation of the great impetus to prosperity in the opening of Panama?

Take Houston and Galveston first! Their interests may, perhaps, be grouped as one, since the dredging of the Buffalo Bayou has practically given Houston ocean front. The clearing of this canal has cost seven millions, the building of independent terminals another four millions. In Houston are 47 lumber corporations. You can buy hardwood from these lumber corporations at \$25 a thousand, soft wood at \$18 a thousand. In New York that

identical lumber costs from \$42 to \$75 a thousand. Why? Rates! Too many middlemen between!

Not long ago, I published the fact that I had been asked \$60 a thousand for lumber in New York State. At once came printed and private (to the editor) attacks for the statement. Within one month of the time of the attacks, I was able to send one of the attacking lumber journals a bill for—not \$60, but—\$65 and \$75 a thousand.

Texas hopes to see these lumber rates cut by water shipment in independent lines in a proportion of 4 to 1. Similar expectations are held regarding lumber, cotton, wheat. At the end of the canal at

And there can be no doubt that these hopes will be in a measure justified. The crop had no sooner been harvested in Kansas this year, than three cargoes of grain went out by way of Houston and Galveston in one week—and this, practically, without elevators or automatic loading devices. In fact, Houston expects to expand like Chicago, and for the same reasons—as the head of navigation and the farthest inland harbor.

When you come to New Orleans, you must practically include the plans of St. Louis and Kansas City to feed traffic into New Orleans by systems of civic steel barges and river freighters. Within the past year, both Kansas City and St. Louis



TURNING BASIN SHIP CHANNEL AT HOUSTON. "WHERE SEVENTEEN RAILROADS MEET THE SEA." EXCAVATIONS IN BACKGROUND SHOW LOCATION OF FREE MUNICIPAL WHARVES

Houston are 174 acres of a turning basin. The canal, itself, offers factory sites on both sides its 50 miles. Will the day come when Texas will manufacture her cotton and wheat, as she today does her beef and rice? Will furniture factories move down from inland to the coast? Texas ports hope so. The canal is now 20 feet deep and is being dredged to a depth of 25.

What made Manchester a great city? What made Montreal? The fact that these cities were farthest inland harbors. Houston boasts that she is 500 miles nearer the grain fields of the Middle West than any harbor in America. Houston hopes that of the many ocean liners to be attracted to her doors by the canal, of even the average big freighters—20,000 tons—one ship will carry as much traffic as 1,000 cars, or 40 trains of 25 cars at rates better than rail as one to four.

have established such systems by public subscription; and it is pointed out that coal and steel can be brought down from Pittsburgh at a reduction of almost 500% against rail rates. Kansas City and St. Louis are really doing this because Texas ports have forced them to it.

Kansas City and St. Louis formerly handled much of Texas traffic. Then Texas began to develop her harbors and put in independent lines. It was so much cheaper for Texas to deal with New York, Boston and Philadelphia by water than Kansas City and St. Louis by rail, that the trade formerly enjoyed by these cities began to go to Atlantic ports. The saving to inland points like Ft. Worth was something like 100%; so Kansas City and St. Louis have established their civic barge systems. But the system would be incomplete without independent lines at New Orleans; so New



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"MOBILE HAS FOUGHT OUT IN THE COURTS WHETHER RAILROADS CAN BAR OUT INDEPENDENT SHIPS BY EXTRA CHARGES CONCEALED IN 'SWITCHING' "

Orleans has established her civic steamship line, in the beginning, chiefly designed for South American commerce.

Both St. Louis and New Orleans have opened elaborately organized South American bureaus. Files are kept of every business house and bank and their standing, in South and Central America. A staff of commercial experts and translators is attached to these bureaus. Both cities issue trade journals in Spanish for South and Central American trade. Catalogues of "made in America" goods printed in Spanish are sent from the New Orleans Board of Trade, and the returns in a single year have been amazing.

Why it was necessary to establish independent steamship lines to South America is too long a story to be told here. It was *not* a case of other steamships not existing. It was discrimination against American goods by foreign "pools." Anyone

wanting the most amazing details can get them by writing to the New Orleans Progressive Club.

New Orleans has, of course, her civic and independent terminal system. This belt line, guaranteeing equal treatment to all railroads and all ships, was a thing of gradual growth, but twenty-five millions, probably, does not exceed its cost. A private corporation was just putting in similar terminals for Mobile when I was there. These are to be 1700 feet long, with berths for 15 or 20 vessels, tracks for 500 cars, and fire-proof steel and concrete sheds. Mobile channel has been gradually deepened from 18 to 23 and 27 feet, at a cost of two millions, and the improved channel has witnessed increased traffic from 290 steamships calling in 1895, to 618 calling in 1911. Of these, 121 were coastwise traders.

With rates in their present higgledy-piggledy mix-up, it is an easy matter for



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THE GREAT CAUSEWAY, COSTING \$1,000,000, WHICH CONNECTS GALVESTON WITH THE MAINLAND. IT ACCOMMODATES FOOT PASSENGERS, TEAM TRAFFIC, ELECTRIC CARS AND STEAM RAILWAY TRAINS.

the ships to get a cargo going out. It is another matter to get a cargo coming in. At Mobile are five trunk railroad systems. Long ago, Mobile was a great cotton port. Of late, Galveston and Savannah have captured the big cotton traffic. With inland navigation improved almost up to the coal and steel areas of Alabama, Mobile hopes to get back not only big cotton traffic, but to develop an enormous export in steel and iron. The variation in rates is variously estimated as likely to be 4 to 1, 3 to 1. With barge access to the coal fields, Mobile can boast the cheapest bunker coal in the world—at \$1.50 to \$1.80.

When you come to Pensacola, you are at the harbor for which nature has done the most and man the least. Pensacola boasts a natural draught of 35 feet. It is the nearest of all the Gulf ports to Panama. It is one of the most sheltered harbors in America. Over fourteen millions have been spent in the navy yards, recently reduced; and Pensacola is 754 miles

to the Middle West, compared to New York's 1000 miles. Three-fourths of her harbor front is controlled by the city, but Pensacola has in the past suffered for being hitched up to one railroad. This road was not favorable to independent coasting ships. Independent ships stopped calling, and the harbor was killed; but recently three new railroad systems have pushed into Pensacola.

An inland sea channel will presently be completed, giving barge access to the coal regions, and Pensacola is at present divided as to whether she hopes to become a second Manchester or a second Los Angeles. Fort Barrancas and the navy yards give her more the character of a great pleasure and military resort than traffic centre; but what has built Los Angeles but the spirit of the people? And Pensacola boasts the same progressive spirit. It is her ardent hope, too, as closer relations with Central and South America develop, that the navy yards will be restored to former activity.



THE RAILROAD THAT WENT TO SEA

Long Key Viaduct, two and one-tenth miles long, on the Florida East Coast Railroad. The line is completed to Key West, from which a ferry runs to Havana, a distance of ninety miles

GLIMPSE OF OLD PANAMA

By DR. C. L. G. ANDERSON

MEDICAL Reserve Corps, U. S. Army; late Physician Isthmian Canal Commission; formerly Major and Surgeon U. S. Volunteers in the Philippines. This article has been prepared by Dr. Anderson from his history, *Old Panama and Castilla del Oro*, a short review of which appears at the end of this article. Dr. Anderson has lived and traveled much in Spanish-America, and while he writes with the accuracy of the historian that he is, he preserves the spell of romance that broods over every coast of the Spanish main.

IN the year 1501, Don Rodrigo de Bastidas sailed along the Northern shores of South America, lately discovered by Columbus, trading with the Indians for gold and pearls. He followed the coast Westward as far as the Gulf of Urabá, or Darien, and the site where Nombre de Dios was settled later, about midway the Caribbean shore of the Isthmus. Bastidas had with him that able pilot, Juan de la Cosa, and a bright young man by the name of Vasco Nuñez de Balboa. These were the first Europeans to visit the eastern half of the Isthmus of Panama. Bastidas got back to Spain with his pearls, brought his family out to Santo Domingo, and became the founder and first governor of Santa Marta.

The next year, 1502, Columbus, on his fourth and last voyage to the new lands and seas he had found in the West, steered southward along the Caribbean coast of Central America looking for a waterway, which he believed existed in that region, to carry his caravels into the Indian Ocean and to the magnificent empire of Kubla Khan. Through his Indian interpreters he understood that the other ocean he was seeking was not far off, and that the Ganges River was only a few days distant, but the worm-eaten condition of his vessels and the fierce storms encountered forced the old admiral to turn about at the little port of El Retrete on the Isthmus of Panama, and give up his long-continued quest for the strait.

Turning backward along the western half of Panama, Columbus entered the River Belen in the province of Veragua on the feast of the Epiphany, January 6,



© Harris & Ewing

1503, and there he and his brother Bartholomew started a settlement which the admiral named Nuestra Señora de Belen. Las Casas, the good bishop of Chiapa, calls this the first town founded by Spaniards on the continent of America. The Quibian, or head chieftain of Veragua, resented the invasion of his lands by the white strangers, called together his warriors, and drove the Christians to their ships.

On this voyage Columbus entered or named many ports and rivers of the Isthmus, among them the rivers Belen, Veragua and Chagres; and the harbors of Colon, Puerto Bello and Bastimentos. Almirante (Admiral's) Bay on the confines of Costa Rica was so called because Columbus, on this voyage, was the first European to navigate its waters.

After many vicissitudes of fortune, Columbus managed to return to Spain, where he died in neglect in 1506. About 1540, his ashes were brought back to America and interred in the Cathedral at Santo Domingo, not far from the grave of Rodrigo de Bastidas. Thus the *restos*, or remains, of the two discoverers of the Isthmus of Panama rest beneath the same roof in the old capital of the Indies.

The next Europeans to visit the Isthmus were the parties of the rival governors, Diego de Nicuesa and Alonso de Ojeda, between whom King Ferdinand had divided the government of the mainland, or *tierra firme* as the Spaniards called it. Both expeditions departed from Santo Domingo in the month of November, 1509. The grant to Nicuesa was called Castilla del Oro (Golden Castile) and included all of



THE ADUANA, OR OLD CUSTOM HOUSE, AT PUERTO BELLO. TONS OF SILVER AND GOLD PASSED THROUGH HERE YEARLY TO ENRICH THE COFFERS OF SPAIN

COLUMBUS AND THE INDIAN MAIDEN—STATUE PRESENTED TO THE PEOPLE OF PANAMA BY THE EMPRESS EUGENIE. OF THE MANY ALLEGED LIKENESSES OF COLUMBUS THIS IS CONSIDERED PERHAPS THE TRUEST DELINEATION OF THE OLD ADMIRAL

the Isthmus of Panama. At that time, Veragua was a synonym for gold, so Nicuesa first sought the rich province of Veragua where Columbus declared that he saw more signs of gold in the first two days than he saw in Hispaniola during four years.

With shipwreck and loss of men, the expedition found the Rio Belen, and on the site occupied by Don Bartolomé Colon, in 1503, Nicuesa established the first capital of his territory. Starvation and disease soon drove him out, and he sailed to the Eastward. A Genoese sailor, named Gregorio, who had been with Columbus, showed the way into Puerto Bello, where was found an anchor sticking in the sand, left by the old admiral. The Indians were hostile and Nicuesa proceeded seven leagues farther on, when the inviting appearance of the shore prompted the governor to exclaim, "*Paremos aqui en nombre de Dios*" (Let us stop here in the name of God). Thus was named in advance the town of Nombre de Dios, founded in 1510, and still in existence.

In the meantime, Ojeda had arrived at his territory East of the Gulf of Urabá, now included in the boundaries of Colombia. He had many fights with the hostile natives and returned wounded to Santo Domingo. The remainder of his party, under the Bachiller Encisco, was so hotly beset by the Carib Indians that, upon the advice of Balboa, they crossed to the Western shore of the Gulf of Urabá, where the natives did not use the deadly arrow-poison. Chief Cemaco was defeated and his principal town, called Darien, yielded abundant provisions and much golden booty to the Christians. The Spaniards located in the village, christening it Santa Maria la Antigua del Darien, a handicap of a name usually abbreviated to Antigua.

At the first town meeting held by white men in America, Encisco was deposed and Balboa and Zamudio were elected alcaldes. Being now in Castilla del Oro, Governor Nicuesa was invited to come to Antigua and rule the colony. When the governor finally arrived the people had changed their mind, and they bade him begone. He and his party sailed away from Darien on the first day of March, 1511, and that was the last ever seen of Diego de Nicuesa, first governor of Castilla del Oro.

Balboa remained at the head of the

colony and was *de facto* governor of all Europeans at this time on the mainland. Chief Panciaco told him of another ocean sea beyond the mountains, and on the 25th of September, 1513, from the peak of Pirre in the province of Quarequa, Balboa was the first white man to behold the Pacific Ocean. From a like summit farther West, Francis Drake and John Oxenham, in 1573, were the first Englishmen to view this sea forbidden to them by the Spaniards. Both these men lived to sail upon the Pacific, Drake on his voyage of circumnavigation, and Oxenham to loot the Spanish ships, and later to be executed as a pirate in Lima.

Balboa descended the South slope of the divide, and on the 29th of the same month waded into the Gulf of San Miguel and took possession for the crown of Spain. Making a leisurely journey back to the North coast, Balboa reported his great discovery to the king, asking that he be made governor of this territory. Before hearing from Balboa, Ferdinand had appointed an old colonel of infantry, named Pedro Arias de Avila, to command and govern the Isthmus. The new governor, usually called Pedrarias by Spanish writers, in due time arrived at Antigua with a force of 1,500 men, a few of whom, like Hernando de Soto, carved their names deep on the annals of the New World. It soon became evident that Pedrarias was jealous and envious of the fame of Balboa, and boded him no good.

Balboa had been named Adelantado of the South Sea and of the province of Panama, and was preparing a force at the Pearl Islands to explore in the direction of Peru, when the governor invited him to return to Acla to confer with him. Upon arrival at this new settlement on Caledonia Bay, false charges of treason were preferred against Balboa, and he was found guilty and beheaded, together with four of his friends.

Pedrarias soon abandoned Antigua and moved his capital to the shore of the South Sea. At the fishing station known as *Panama*, the governor founded the city of Panama on the 15th of August, 1519. It was here that Francisco Pizarro, Diego de Almagro and Father Luque (Padre Loco they called him) signed the famous agreement, in 1526, for the discovery and despoliation of Peru.



CHIEF PANJIACO SHAMES THE SPANIARDS FOR QUARRELING OVER A BIT OF GOLD WHEN THE KINGDOM OF PERU, ON THE SOUTH SEA, CONTAINED SO MUCH OF IT



SIR FRANCIS DRAKE, WHO PERFORMED SO MANY DARING DEEDS UPON AND ABOUT THE ISTHMUS OF PANAMA, FROM AN ORIGINAL PAINTING



PIZARRO, ALMAGRO AND LUQUE MAKING THEIR FAMOUS AGREEMENT IN THE CITY OF OLD PANAMA FOR THE DISCOVERY AND DESPOLIATION OF PERU



BALBOA AND OTHER SPANISH CAPTAINS FOUGHT A TRIBE OF INDIANS WHO LIVED IN TREE TOPS



HEAVY MERCHANDISE WAS CARRIED ON FLAT-BOTTOMED BOATS UP AND DOWN THE CHAGRES RIVER. THE MOUTH OF THE CHAGRES WAS ENTERED BY COLUMBUS IN THE SEARCH FOR A WATERWAY TO THE INDIAN OCEAN, AND TODAY, AFTER FOUR HUNDRED YEARS OF EFFORT, THE PANAMA CANAL FOLLOWS THE CHAGRES RIVER ROUTE.

The city of Panama (the ruins of which we now call Old Panama) was the first settlement by Europeans on the Pacific Coast. It was called the Gold Cup on account of its riches, and for years was the metropolis of the South Sea. The city grew rapidly under the stimulus of the Peruvian trade, and in 1575 consisted of 500 houses, all of wood. In 1610, Panama contained 548 white male citizens, and 3,500 negro slaves, besides the women, children and free Africans. At this time, the houses of the Cabildo, the Audiencia, Hospital, Jesuits' convent, nunnery of the Conception and slaughter-house were constructed of stone. Most of the people were rich from trade and traffic, and a few had estates in the country and raised cattle. Some merchants possessed mule-trains, others owned barges on the Chagres River, worked by negro slaves, which bore the heavy merchandise between Nombre de Dios and Venta de Cruces.

The wealth of Peru, Mexico and other parts of the Indies naturally invited the attention of privateer and buccaneer. Spanish galleons were overhauled and robbed all over the Caribbean, and on the voyage to Spain. The most prominent of the privateers, in the latter part of the sixteenth century, was Sir Francis Drake, who was a terror to the whole Spanish Main.

In the seventeenth century the Caribbean Sea was dominated by English, French and Dutch buccaneers, those New World Vikings, who not only swept the sea, but invaded the Spanish provinces and crossed the Isthmus of Panama and infested the South Sea. Writings of their transactions, mostly in English, have made this period the most familiar to English readers.

The best known buccaneer chief was Henry Morgan, whose command, in 1671, captured the castle of San Lorenzo guarding the mouth of the Chagres, ascended the river to Cruces, and then went by land to Panama, which at that time contained 30,000 souls. President Guzman drew up his infantry, cavalry and wild cattle in the savannahs before the city, and gave battle to the buccaneers. The latter were the victors and in the afternoon entered the town, which they found deserted and in flames. Morgan's men accomplished what British regulars, both army and

navy, were never able to do. Morgan himself got away to England with the major share of the loot, and was knighted by Charles II.

Panama was almost entirely destroyed by the fire, and as the location was unhealthy and difficult to fortify, the city was rebuilt, in 1674, on its present site, five miles farther west, at the foot of Ancon Mountain. Though founded 155 years after the old city, the new Panama presents much that is strange and ancient. The ruins of the Jesuits' college, Santo Domingo church and other buildings destroyed by fire or earthquake, attract the attention of the visitor. The oldest church yet in use is San Felipe Neri, built in 1688. The university was established in 1751. The attractive cathedral was erected in 1760.

In the old Casa del Cabildo, or city hall, a congress of the people of Panama, in 1821, declared the Isthmus independent of the Spanish crown. Here also was held, in 1826, at the call of Simon Bolivar, the first congress of Americanists, really the precursor of the Pan-American Union.

The Panama Railroad was completed in 1855, and the following year, at Playa Prieta, the terminus of the road, occurred the unfortunate encounter between the passengers of the Steamship *Illinois* and the black rabble of Panama. In recent years, George Loew's Grand Hotel, fronting the plaza, has been used as a headquarters by both French and American canal companies. Most of the old fortifications have been leveled, but the sea-walls still stand, against which the Pacific tide ebbs and rises to a height of from 18 to 22 feet.

The success of the buccaneers induced William Paterson, in 1698, to plant on Caledonia Bay a formidable Scotch colony, with intent to hold that pass and control the trade of both oceans. The deadly climate rapidly killed off these hardy Northmen, and a Spanish force from Cartagena compelled the remainder to evacuate New Edinburgh.

For 75 years, Nombre de Dios was the sole port of entry on the north coast of Panama. The harbor was unsheltered and dangerous when the northers blew, many vessels being cast away here. The place was a pesthole, and Bishop Berlanga, writing to the king in 1535, calls it a den of



OLD CATHEDRAL IN THE PRESENT CITY OF PANAMA

thieves and graveyard of travelers. Nevertheless, viceroys and vicequeens, high prelates of the church, and some of the most famous men and warriors of history have passed through or rested in this old Isthmian port.

Nombre de Dios was much harassed by the Cimarrones, or runaway negroes, who gathered in bands and robbed passengers and packs on the *camino real*, or king's highway. Foreign freebooters hung about the port and lay in wait for Spanish treasure ships.

In 1572, Francis Drake, with his brother and John Oxenham, landed here one night and made a fruitless attempt to rob the king's treasure-house of gold and jewels. Drake received a serious wound and his men carried him hurriedly to the boats, paying no attention to a stack of silver 70 feet long, 10 feet broad and 12 feet high.

In after years, the urchins of the town used to frighten the wits out of their parents by shouting, "Drake is coming." Sir Francis did come back again, in 1596, with a large fleet, and a land force under Sir Thomas Baskerville. The soldiers started out to take Panama, but meeting with much resistance, they turned back when about half-way over the Isthmus. The English then fired the town, and sailed west to Puerto Bello.

It was off Puerto Bello that Sir Francis Drake fell sick of a flux and died on the 28th day of January, 1596. The next day his body was placed in a leaden coffin and committed to the sea near the little island which now bears his name. Steamers to Colon pass in plain sight of the spot.

To secure a safer port and one more easily defended, the Spaniards, in 1597, moved the business of Nombre de Dios to Puerto Bello, which became the northern terminus of the overland road. The city was founded where it now stands, at the head of the bay, and surrounded by mountains. In its prime, in the time of the galleons and fair, Puerto Bello consisted of 130 houses, a custom house, governor's house, hospital, great church and convents. Besides, there were four suburbs of straw shacks, where dwelt the negro slaves and poor Spaniards. Though the climate was better than that of Nombre de Dios, yet it was hot, humid and sickly. Childbirth was uniformly fatal to both mother and child. Horses and cattle would not breed, and hens brought from Cartagena and Panama declined to lay eggs.

When the yearly fleet arrived from Spain, the city held a fair lasting two months, to which resorted merchants and traders from Panama, Lima, Cartagena, Spain and other parts, so that for the time Puerto Bello was one of the busiest marts in the world. European ships lost a half, or at least a third, of their men while lying there. During the fair a house rented for 5,000 dollars, and 1,000 crowns was paid for a shop for fifteen days. The 5,000 soldiers and sailors on the ships erected booths of sails on the plaza, to which the merchandise was drawn on sledges, and where most of the trading took place.

When the *galeones* reached Puerto Bello, the gold and silver from Peru, held at Panama, was sent over the Isthmus on packmules. Thomas Gage, in 1637, saw 200 mules in one day arrive from Panama laden with wedges of silver, which were piled up in the plaza like heaps of stones. The houses were crowded with people, the market-place and streets crammed with European goods, provisions from Cartagena and chests of gold, cacao, quian bark and bezoar stones from Peru. When the fleet sailed, the merchants departed,

and the city relapsed into the *tiempo muerto*, or dead time, when silence and humidity again reigned supreme.

To protect his bullion and provide a stronghold on the Isthmus, Philip II. constructed four castles, or forts, about Puerto Bello, the most famous of which was San Felipe defending the mouth of the harbor, called the Iron Fort on account of its great strength.

In spite of its defenses, Puerto Bello was taken by Francis Drake, by William Parker in 1602, by Henry Morgan in 1669 and by Coxon and La Sound in 1679. In 1739, Admiral Vernon, after whom was named Mount Vernon,

the home of George Washington, captured the forts with six ships of the English navy. The next year, Vernon took the castle of San Lorenzo commanding the entrance to the Chagres River. During this conflict, known as the "War of Jenkins' Ear," England planned to capture the city of Panama, in conjunction with a fleet under Admiral Anson in the Pacific, and hold this door to the South Sea, but the project fell through.

The most important and interesting feature of Old Panama was the passenger and freight transit over the *camino real*, and by the Chagres-Cruces route. The change from Nombre de Dios to Puerto Bello on the north coast, and from the old

to the present city of Panama on the Pacific side, made but a few miles difference in the length of the trans-isthmian route.

The Spaniards used to pack bars of silver over the all-land road like cordwood. It was between Panama and the Chagres River, in 1573, that the quick wit of the treasurer of Lima saved the king's tribute, as well as his own jewels, from

Drake and his followers. A few months later, however, over near Nombre de Dios, the daring Englishman held up a train of 190 mules, each loaded with 300 pounds of the precious metal, and got safely away with all his party could carry. Fifteen tons of silver in bars were left behind and buried in the soil, and the Spaniards afterwards dug up the ground for a mile around about in searching for it.



EARLY SPANISH FERRY ON CHAGRES RIVER

OLD PANAMA AND CASTILLA DEL ORO, by Dr. C. L. G. Anderson. The Sudwarth Co., Washington, D. C. 559 pages. Price, \$5.00.

As a matter of substance this study is a notable one, a deeply interesting and opportune revival of old Panama as the matrix of the new. The author avoids the modern, or steam shovel, era of Panama history, and fills the general demand for a knowledge of the less known and more attractive period of the Spanish discovery, conquest, and colonization of the Isthmus and adjacent countries. The discovery by Columbus of the Caribbean coast of Central America and Panama, his four voyages to America, his attempt to make a settlement on the Rio Belen on the Isthmus; the voyages and expeditions of Don Rodrigo de Bastidas, Alonso de Ojeda and others; the daring raids of Sir Francis Drake; the sack of the city of Old Panama by Henry Morgan—in fact all the events of the early period of Isthmian history are told in detail and read like a romance. Dr. Anderson reviews the first interoceanic routes from Tehautepec south to Uraba, giving particular attention to surveys of the Chagres River. He calls the Chagres-Panama pass the gateway to the Pacific and the door to Asia, but warns us that this door opens in both directions and should be effectively guarded. The chapter on the early efforts for a canal is the best exposition of that subject ever written. Descriptions of Darien, Panama, and Veragua are nearly literal translations from original Spanish reports and documents. The Indians are not neglected, but are described just as found by the Conquistadores. The author has garnered his material from original sources in Spanish, French, Dutch and English, and his scholarly work will at once rank as an authority on the early period of Isthmian history. The text is illumined with maps and rare illustrations, as well as by hundreds of interesting footnotes. There is also an appendix of original documents, an extensive bibliography, and a glossary of Spanish terms. There could be no more fascinating book for the general reader and no more accurate one for the tourist bound for the Isthmus.

AMERICAN RIVERS AND THE PANAMA CANAL

By LIEUT.-COL. WM. L. SIBERT

THAT we cannot get the full benefit of the Panama Canal until we improve the rivers of the United States is the opinion of Lieut.-Col. Sibert, member of the Panama Canal Commission and Chief Engineer of the Atlantic Division of the Panama Canal. Colonel Sibert has had an extended and varied experience in the work of river and harbor improvement. He speaks with authority, therefore, whether it be concerning the great canal, the waterways of the United States, or their mutual relations.

THE Panama Canal, on account of being the cheapest transportation route between our coasts, and on account of the legislation already enacted in connection with the question of tolls, will probably be the means, directly or indirectly, of causing the American flag to fly from many ships engaged in the foreign trade and, in addition, enable the people of the United States to obtain from our rivers that use to which they are entitled and of which they have been deprived.

The people are entitled to all economies in transportation that nature has made practicable, because on cheap transportation depends the development of industry, and when industry is fully developed all



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agencies connected therewith are operating at full capacity.

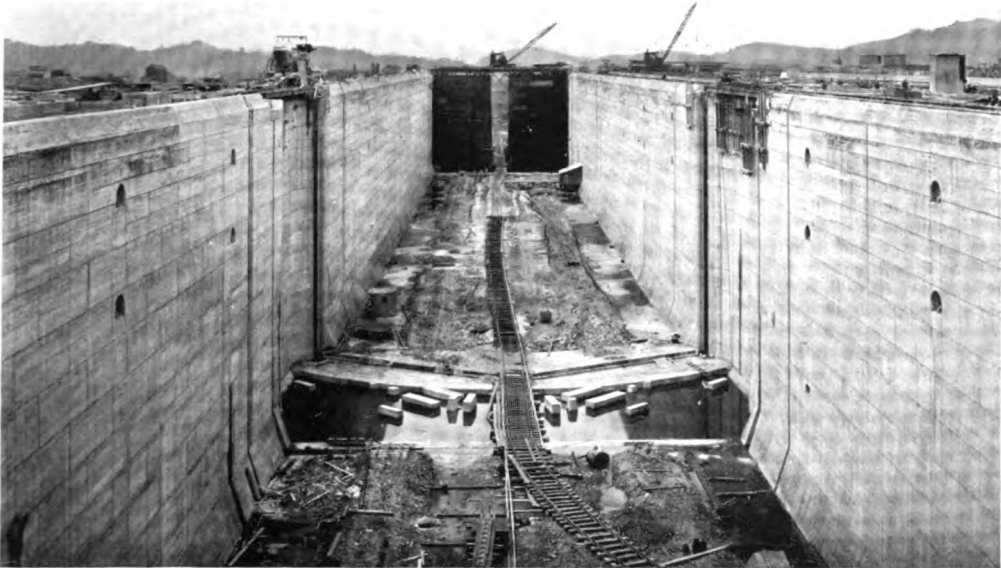
We often hear the statement that rivers should not be improved at government expense and made free, because the resultant cheapening of freight rates would interfere with the earnings of money invested in railroads, while, as a matter of fact, if transportation costs are materially reduced, new industries spring into existence, resulting in an increase

in the business of the railroads. The character and routing of freights may be changed, but the increase in earning capacity is a certainty because the greater part of the country can only be reached by rail. The improvement of the Great Lakes is a striking instance where such



Photo by Victor F. Halbarth

IN HOSPITAL GROUNDS, COLON



PEDRO MIGUEL LOCKS—EAST CHAMBER LOOKING SOUTH—SAFETY GATES IN BACKGROUND

a result has followed a new line of cheap transportation.

If that combination of water and rail transportation that resulted in the greater commercial prosperity did lessen the earning capacity of the railroads below a reasonable profit, it would pay the people to appropriate the money and pay the loss, because the railroads are simply an instrument in accomplishing the nation's aim—full industrial development. Possible injury to an instrument must not block the accomplishment of the main purpose. If goods can be brought together at interior river shipping points by short rail haul with a reasonable profit, such as Pittsburgh, Cincinnati, Louisville, St. Louis, Kansas City, *et cetera*, and thence shipped in large lots by river barges to other interior cities for distribution by short rail hauls, or to the seacoast for export, at less cost than such goods can be transported by all-rail haul, the country is entitled to that addition to its wealth producing capacity.

The time is fast approaching when

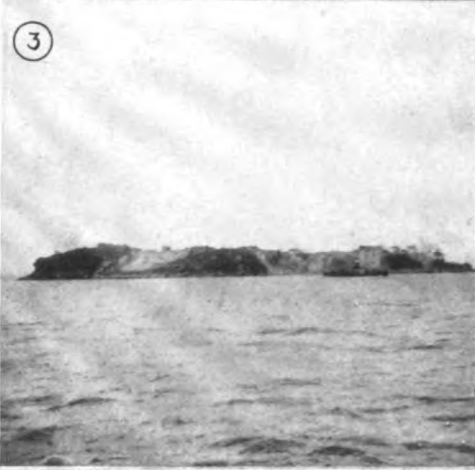
the United States must manufacture and transport at such a cost as will enable its goods to enter the markets of the world, and that can only come about when the people enjoy the cheapest transportation practicable.

What part can our rivers play in accomplishing this result, both as regards commerce between our coasts and with foreign nations? Our country, commercially, is practically divided by the Rocky Mountains. The eastern half is so great, its industries are so varied, its transportation facilities so excellent within itself and with foreign countries, that it can live and thrive without its far western half. The Pacific Coast, however, being separated by impracticable freight rates from the markets of the eastern half of the country, and from the foreign markets bordering the Atlantic Ocean, has experienced so far only a partial, stunted growth, and nothing but cheap transportation for the ordinary commodities of commerce can make that development full. Such development will make reciprocal markets for

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Photos by Victor F. Halbarth
and Sebert Sinclair

- 1 THE SPILLWAY, GATUN
- 2 FLOOD RESULTING FROM SLIDE AT EMPIRE
- 3 NAOS ISLAND, PACIFIC ENTRANCE, TO BE STRONGLY FORTIFIED
- 4 WORK TRAIN IN GULEBRA CUT

both halves of our country, increase our foreign trade, and add to the wealth, power and unity of the nation.

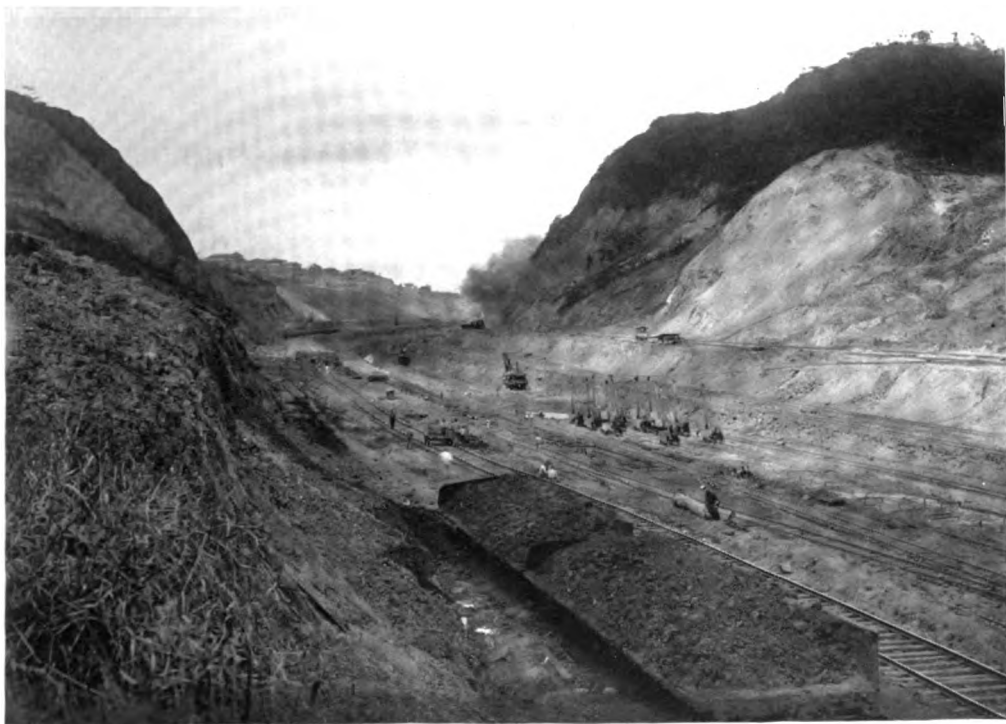
The Panama Canal is the main link in accomplishing this, and our rivers and our railroads leading to coast points are the other. The non-use of rivers has been due to a lack of dependable navigable depths and to their isolation by the railroads. Having no feeders working in harmony with them, their business has been confined to such commerce as originated on their banks and had its market on their banks. This means that the freight offering at most places is not enough to warrant proper terminals.

The day of the packet boat for long hauls, with the depth of water practicable in most of our streams, is over, and the full economy of river transportation can only be had with towboats and barges, a barge-load or more of freight to originate and be ready to move from each landing made by towboat. The railroads in the past have distinctly discouraged any com-

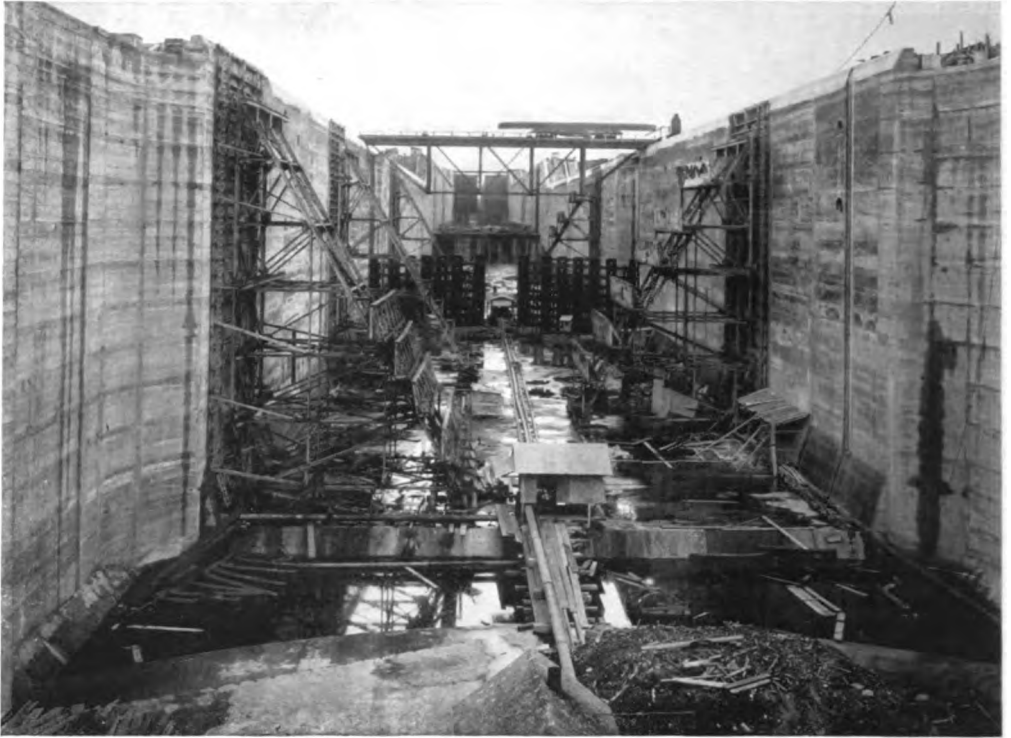
bination of rail and river transportation that would enable the river to effect an economy in transporting goods to their market.

If the proper combination of rail and water transportation cannot be brought about under the authority given by the last Congress to the Interstate Commerce Commission, it is time that water transportation companies are given the right of eminent domain where necessary to obtain suitable terminal facilities, and that they undertake to construct short-rail feeder lines concentrating freight at suitable river stations in quantities sufficient to warrant modern means for the quick and cheap handling of freights. It is thought, however, that Congress can and will cause the needed combination.

It is necessary, as a preliminary proposition in accomplishing this, that the rivers have a dependable depth all the year for suitable barge transportation. Many people who have seen the freight economies possible by utilizing our rivers



DEEPEST PART OF CULEBRA CUT—THE NOTCH NEAR TOP OF HILL ON THE RIGHT SHOWS FIRST EXCAVATION IN THE CUT BY THE FRENCH



GATUN LOWER LOCKS, WEST CHAMBER LOOKING SOUTH

have urged the completion of the projects of improvement by the time the Panama Canal is finished. But the work under such projects has not progressed at anything like the rate at which the Panama Canal work has been prosecuted. The Panama Canal work and the river improvement work have both been practically directed by men from the same corps of the Army. In the case of the Panama Canal all the money that could be properly and economically expended has been available, while in river projects that has not been the case, and in this lies the whole reason for the relative rates of progress referred to above.

Congress cannot be expected to provide at once all the money necessary to crowd to its fullest economical extent the improvement of all the rivers of the United States, and if it did it might improve some or adopt some projects of improvement that might not cause such a cheapening of freights as to warrant the cost of improvement. The great trunk streams and such tributaries as could almost be

classed as trunk streams should be completely, and as quickly as practicable, improved and the work of coordinating their use in connection with the railroads studied and tried out, from which it could be judged what other tributaries could be profitably brought into the system if improved, and when the decision is reached to improve such stream, do the work as quickly, as economically practicable.

No one can tell the new industries that will come into existence on account of the combination of the Panama Canal and the river transportation of our country, when the depth of water is dependable and the proper combination of water and rail haul is accomplished, but the necessity of finding foreign markets for more and more of our manufactured articles each year, will cause this question to grow in importance because our competitors are already practicing all economies in bringing together the raw material for manufacture and the shipment of the finished product to its market.

THE TWO GREAT CANALS

By HANNIS TAYLOR

HERE is a distinct contribution to the American side of the argument over Panama Canal tolls, contributed by a leading authority on International Law. Mr. Taylor, who is a North Carolinian by birth and was at one time U. S. Minister to Spain, is the author of many notable works in that line, having received the degree of LL.D from the Universities of Edinburgh and Dublin for his masterly "History of the English Constitution."

WHEN in the Senate of the United States a motion was made on July 29, 1852, to proceed to the consideration of a bill authorizing the exploration of the courses of navigation used by vessels proceeding to and from China, William H. Seward, then a Senator from New York, said that the settlement of the Pacific Coast was still in a state of sheer infancy, despite the fact that steady streams of emigration were then flowing thither from every State eastward of the Rocky Mountains, from Australia, from the South American States, from Europe and from Asia. That movement, he said, was not a sudden or accidental one, but one for which men and nature had been preparing for nearly four hundred years. During that time merchants and princes had been asking how they could reach the East cheaply and expeditiously, that intercourse and commerce might be established between its ancient nations and the newer ones of the West. To those objects De Gama, Columbus, Vespucci, Cabot, Hudson and other navigators had devoted their talents, their labors and their lives.

Thus, with the eyes of a seer, he beheld the most sublime spectacle in the history of humanity—the reunion of the two civilizations, which, after having parted on the plains of Asia thousands of years before, and after traveling ever afterwards in opposite directions around the world, met and mingled again on the coasts and islands of the Pacific. Mastered and overcome by the great event, Seward exclaimed: "Who does not see that every year hereafter European commerce, Eu-



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ropean politics, European thought and European activity, although actually becoming more intimate, will nevertheless ultimately sink in importance, while the Pacific Ocean, its shores, its islands and the vast regions beyond will become the chief theatre of events in the world's great hereafter?"

By the necessities of her geographical position Venice was forced to become a maritime power and to look to the East.

The Venetians extended their commerce beyond Greece, Syria and Egypt; they did some trade even with India. Before the Crusades ended it became usual for the Crusaders to take the fleets of Venice or Genoa to cross the Mediterranean, which cities alone had fleets of transport galleys in those days. The commercial supremacy of Venice thus built up was finally undermined through the discovery by the Portuguese of the route to India around the Cape of Good Hope, which enabled European traders to see India for themselves and to examine what were its products and its wants. Thus ships could leave the ports of their owners in Europe with a reasonable hope of reaching, via the Cape, the places to which they were destined, without trans-shipment or other intermediary obstacle.

The Portuguese, who thus gave to Europe a "new world" in the East, obtained Macao as a settlement from the Chinese as early as 1537, and their trading operations followed close on the discoveries of their navigators on the coast of Africa, in India, and in the Indian Archipelago. In our own time the Cape of Good Hope route, which 400 years ago destroyed the com-

mercial supremacy of Venice, has become involved in a losing fight with the Suez Canal for the trade of the Orient. Another blow will be given in the same direction by the Panama Canal, with its saving of nearly 5,000 miles for American steamers, which will undoubtedly divert practically all our Australian traffic from the Good Hope route. And much European traffic will probably prefer the Panama route to the Good Hope route, where coaling stations are few and far apart and prices generally rather high.

At the end of 1910 the cash expenditure on the Suez Canal amounted to \$126,642,406, the company having an outstanding capital obligation of \$92,484,544. During that year the Suez Canal handled 4,533 vessels having a total tonnage of 16,581,898 net tons; the total receipts of the company for its canal service amounting to \$25,168,400. Payments for fixed charges and for retiring capital obligations amounted to \$6,072,602, while the cost of operating and maintaining the canal, plus appropriations to depreciation reserve, was \$3,857,405. The balance of profits for 1910 was \$15,908,419, the company paying a dividend of 31.6 per cent. to its stockholders.

Suez Canal tolls are always reduced whenever the dividend exceeds 25 per cent. They are now \$1.30 per net ton on ships with cargo and 82 cents per ton on ships in ballast, with a charge of \$1.93 each for passengers older than twelve, and half as much for those younger, children under three going free.

In the construction of the Panama Canal the American people will expend at least \$375,000,000, about three times the capital cost of the Suez Canal. The annual charge for this vast investment will be at least \$12,187,500, to which must be added the cost to operate and maintain, which will be at least \$3,857,405. Such a cost in the case of the Panama Canal would make it an annual charge on the American people of say \$16,045,000.

That our vast expenditure will be an immense benefit to European and Japanese ship-owners there can be no doubt. From Europe the Panama Canal will save 6,000 miles on the present sailing distance to our Pacific Coast ports, and 2,600 miles to points on the West coast of South America. While it will save nothing on

the Suez route from Europe to Asia and Australia, from New York it will shorten the voyage to Hong Kong by 89 miles; to Shanghai by 1629 miles; to Melbourne by 2,656 miles, and to Yokohama by 3,729 miles.

A great readjustment of the ocean traffic routes of the commercial world, affecting directly or indirectly more than half the countries on the globe, will surely be brought about by the opening of the Panama Canal. Next to ourselves, the republics situated along the West coast of South America will be most benefited, hampered as they are now because the only route available for them is the long and dangerous route by the Straits of Magellan, or the shorter but costly route over the Isthmus of Panama, with its double handling of freight.

In what way is our vast expenditure at Panama to become of pecuniary benefit to ourselves; in what way are we to make it an effective means to restore our American merchant marine to its ancient and rightful place on the high seas? Mr. C. M. Keys has well said in a recent number of *The World's Work*:

"The Panama Canal will almost certainly, in time, become the highway for manufactured goods moving from the industrial centres of the United States into the Orient. Whenever a stream of manufactured traffic moves in one direction, a backward stream is almost sure to be created. In all human probability, so far as Oriental trade in finished products is concerned, the Atlantic and Gulf ports will steadily increase in both export and import business. To guess whether New York or New Orleans, or some other port, will be the chief beneficiary of this change of route is little better than prophecy at this moment, but there is no reasonable ground for doubt that the Gulf ports will be stronger in their competition with New York than they ever were before so far as Oriental traffic is concerned. It is not all imagination, this boast one hears in the cities of the South, that in the years to come the headquarters of America's Oriental traffic may be along the Southern coast."

Between the Canal and the transcontinental railroads a sharp competition for traffic is sure to arise. In a decision handed down last year by the Interstate



THE SUEZ

Commerce Commission the inevitable conflict was indicated in the following terms: "The railroads, moreover, must soon meet with a competition by water more intense than any they have heretofore suffered; for within three years another route, one more important, searching, and determinative in its effect upon railroad rates than any other, will be opened—a route all water by way of the Panama Canal. The cutting of this canal will in effect bring the Straits of Magellan 3,500 miles to the Northward, and with modern steamships it is estimated that San Francisco will by water be removed from New York but fourteen days."

Thus the Panama Canal is to reopen a struggle between sea and land transcontinental traffic which really ended in 1885, when the Sunset-Gulf route demonstrated its power to drive the clipper ships of America from the sea, and to sterilize the Pacific Mail, thereby rendering the Panama Railroad more of a curiosity than

a connecting link in a great scheme of transportation. Between 1885 and 1891 the Sunset-Gulf route carried nearly ninety tons out of every hundred tons of freight that moved from the Atlantic Seaboard to California. Thus the domination of the railroads between East and West was established by the man-made lines of steel which became the great trade routes across the continent.

Under present conditions American-built and manned ships cannot profitably compete with foreignships. British and German-built steamships cost no more than two-thirds as much as ships constructed in American yards. A good illustration is offered by the Atlantic Transport Line Steamer *Maine*, built at Sparrow's Point, Md., at a cost of \$1,010,135, while her identical sister ship,

the *Michigan*, was built in England at a cost of \$647,640. Besides, it costs more to operate ships American-manned.

As a nation we are paying very dearly for having permitted American ships to be driven almost entirely out of international trade. In 1861, American ships in foreign trade had an aggregate tonnage of 2,496,894 tons, almost three times as much as now. In the seventies American ships carried more than 30 per cent. of the imports to the United States. For 1911 it was only 10.2 per cent. Of our export trade for that year only 7.5 per cent. was done in American ships. Of the total import and export trade for 1911 American vessels handled only 8.7 per cent. In 1870 they carried 35.6 per cent. of such trade. For the fiscal year 1911 American ships carried only \$280,206,464 or 8.7 per cent. of the total sea-borne commerce of the country, which amounted for the year to \$3,210,642,070.

It has been estimated that the sea-

borne foreign commerce of the country paid American ship-owners about \$11,500,000 in a year, while it yielded to foreign ship-owners some \$135,500,000 during the same period. On June 30, 1911, the aggregate gross tonnage of American ships in foreign trade was only 863,495 tons, or 11.3 per cent. of the total gross tonnage of the entire American merchant marine, the great bulk of which was engaged in coastwise and Great Lakes trade between American ports, a trade from which foreign ships are excluded by federal law.

Can we wonder that under such conditions American enterprise shrinks from competitive operations on the high seas; can we wonder why American ships have been withdrawn from international trade, where they are subject to additional handicaps by reason of contributions made by foreign governments directly to the development of their own merchant marines?

Government-compiled figures place the total of such payments upon the part of foreign nations in support of and encouragement to their merchant marines at \$46,907,220 a year. Great Britain pays in postal and admiralty subventions about \$9,700,000, although only some three per cent. of British shipping in foreign trade shares in this bounty. France pays graded bounties on all vessels built in French shipyards, besides navigation allowances and mail subsidies, in all about \$13,425,000 a year. During the fiscal year ended March, 1909, Japan paid \$6,183,000 in aid of her shipping; and under such encouragement the Japanese merchant fleet grew from 360,695 tons in 1895 to 1,288,053 tons in 1909.

Putting aside the idea of shipbuilding bounties or of subsidies to American steamship lines, how can the Panama Canal be employed so as to bring the largest benefits to the American people by promoting their interests on sea and land? The Panama Canal should be so managed as to open a way to encourage all American shipping without discrimination or favor; it should be made to give the American merchant marine an important advantage in world commerce. In a masterful address on this subject, delivered on May 14, 1912, Mr. Samuel H. Barker, financial editor of the *Philadelphia North American*, said:

"Sentiment and false generosity should

be thrust aside by the American nation in this matter. A national business policy should be inaugurated with the opening of the Panama Canal. This huge project will be purely an American accomplishment. The American people have paid all the cost; they must maintain and operate the Canal, and, under these circumstances, they have a just right to claim and take for themselves its larger benefits.

"Give to any and all American-built and manned ships free use of the Panama Canal. Levy tolls upon all foreign vessels availing of the great waterways. In this way can the American Canal promote American interests. Let the tolls charged foreign ships passing through the Panama Canal be, say, those levied by the Suez Canal. That waterway is owned by a company and is under the virtual control of the British government which, since 1875, has owned 176,602 of the 379,421 shares of the capital stock, acquired at a cost of \$19,855,320.

"The Suez Canal was opened in 1869. It is 103 miles long, and an average of nearly seventeen hours is required for passage through it. At a cost of \$19,300,000 the canal is being widened to 147.6 feet and deepened to 36.1 feet, the present depth being only 28 feet. The Panama Canal will carry 41 feet of water and have a channel from 300 to 1000 feet wide. Ships will pass through the American Canal in ten to eleven hours.

"It is calculated that the most advantageous handling of the world's present commerce will route through the Panama Canal the first year ships to an aggregate tonnage of 8,328,000 net tons. That would be about one-tenth the estimated traffic capacity of the canal. * * * Freedom of American ships from tolls at the Panama Canal will also enable that costly national undertaking to confer the largest measure of benefit upon the people of the United States. So will it be possible for American ships to transport coast-to-coast freight at lowest rates. It is believed that general cargo goods can be carried from Philadelphia to San Francisco for \$5 to \$7 per ton. Transcontinental railroads cannot meet such rates.

"With the Panama Canal made free to American ships, while reasonable tolls are charged to foreign vessels using it, this \$375,000,000-work can become a means of

restoring the American merchant marine to its rightful place and thus save to the American nation tens of millions of dollars now paid foreign ship-owners every year for transporting American commerce, and also of reducing the delivery cost within the United States of all kinds of goods now transported across the country by rail."

When the Hay-Pauncefote treaty of November 18, 1901, was promulgated on February 22, 1902, what is now known as the Canal Zone was foreign territory. By the treaty made between the United States and Panama on November 18, 1903, that zone became the domestic territory of this country for all the purposes of international law. A radical change was thus wrought in the conditions existing at the time the Hay-Pauncefote treaty was made. The leading English authority on international law, Hall, has thus described the conditions under which treaties cease to be obligatory:

"Neither party to a contract can make its binding effect dependent at his will upon conditions other than those contemplated at the moment when the contract was entered into, and on the other hand a contract ceases to be binding so soon as anything which formed an implied condition of its obligatory force at the time of its conclusion is essentially altered. If this be true, and it will scarcely be con-

tradicted, it is only necessary to determine under what implied conditions an international agreement is made. When these are found, the reasons for which a treaty may be disregarded will also be found."

In my own work on International Law, I have stated my concurrence in Hall's view in this form: "Sec. 394. *A treaty may become voidable through subsequent events.* After the validity of an international agreement has been firmly established by the concurrence of such antecedents, it may become voidable through the operation of subsequent events which might not have such an effect in the case of private contract. So unstable are the conditions of international existence, and so difficult is it to enforce a contract between states after the state of facts upon which it was formed has substantially changed, that all such agreements are necessarily made subject to the general understanding that they shall cease to be obligatory *so soon as the conditions upon which they were executed are essentially altered.*"

Under that rule, which is a part of the settled international law of the world, the radical changes in subsequent conditions wrought by the transfer of the sovereignty over the Canal Zone to the United States rendered the Hay-Pauncefote treaty voidable, and subject to modification or abro-

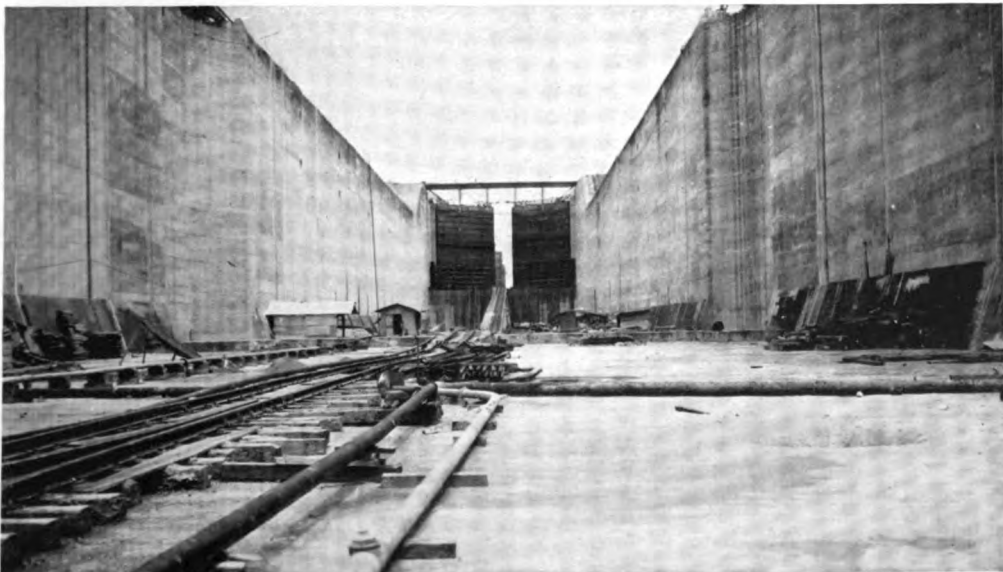


Photo by Sebort Sinclair

PANAMA

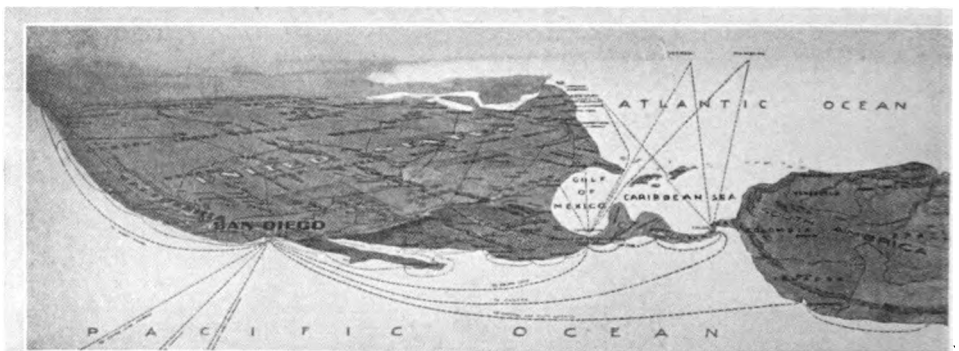
gation, no matter what its original meaning might have been. "That a treaty is no more the supreme law of the land than is an act of Congress is shown by the fact that an act of Congress vacates *pro tanto* a prior inconsistent treaty" (Moore, Int. Law, Sec. V., p. 166). As the Hay-Pauncefote treaty became voidable through a subsequent change in conditions, Congress had a perfect legal and moral right to modify it by legislation, no matter what its original meaning may have been.

But it is entirely unnecessary to resort to that line of argument, unanswerable as it is. Great Britain has not a foot to stand on when the treaty as written is fairly construed. By the treaty of November 18, 1901, it was agreed that the Clayton-Bulwer treaty of April 19, 1850, should be superseded, to the end that the Panama Canal might be constructed under the auspices of the United States without impairing the "general principle of neutralization," which barred the United States from "any exclusive control over" any isthmian canal or railroad which might ever be built, and from "any rights or advantages in regard to commerce or navigation through the said canal which shall not be offered on the same terms" to Great Britain. Under the existing treaty the United States enjoys "the exclusive right of providing for the regulation and management of the canal." It has provided that the canal "shall be free and open to the vessels of all nations on terms of entire equality, so that there shall be no discrimination against any such nation or its citizens or subjects, in respect to the con-

ditions or charges for traffic, or otherwise."

The right of the United States to control the entire subject matter is recognized in the treaty of November 18, 1903, between the United States and Panama, creating the Canal Zone, in the proviso that no costs shall be imposed on vessels, or upon the cargoes, crews, or passengers of vessels using the canal "except such tolls and charges as may be imposed by the United States for the use of the canal and other works." Under our navigation laws, existing when the Hay-Pauncefote treaty was made, foreign vessels were prohibited, then as now, from engaging in trade between American ports. Thus, in making the Panama Canal free to American vessels engaged in such trade, there can be no discrimination, for they run in competition with no foreign vessels.

When we consider that we have performed this immense engineering feat at our own risk and expense, without the least help from any foreign nation; when we look upon our own canal, built across our own territory at a cost of nearly \$400,000,000—three times the cost of the canal at Suez—the British contention that we cannot, without her consent, regulate our own coastwise traffic, in which no foreign nation can participate, becomes grotesque, indeed. No wonder that the private interests antagonistic to the canal cannot stimulate the British Foreign Office to make a real, whole-hearted protest. As the British claim is in every aspect repugnant to justice and common sense, it will die of inanition; it can never rise to the dignity of a real international controversy.



SAN DIEGO, CALIFORNIA, IS OUR NEAREST PORT ON THE WEST COAST TO PANAMA. THIS CITY WILL CELEBRATE WITH A GREAT EXPOSITION IN 1915 THE FORMAL OPENING OF THE CANAL

THE PLEASURE AND HEALTH OF MOTOR BOATING

By C. A. MORGAN

MR. MORGAN is the advertising manager of the Cleveland Auto Boat Manufacturing Company, of Cleveland, Ohio, and has high rank in his profession. The way he presents his subject and the data he gives are of interest both to the "motor bug" and layman.

CURIOSITY in seeing an automobile party touring through several states, or from coast to coast for pleasure, is a thing of the past. Were it possible for the motor boat in its various types to pass along our streets, many of us would suddenly realize that with the increase of automobiling, so also has motor boating increased, until now, upwards of 300,000 are in use in the United States alone, 75% of which are for pleasure only. And this large number is increasing 20% each year.

One only needs a few hours' experience in a motor boat, enjoying the fresh air, the changing scenes, as it glides over the water, with a party of friends, or the fast exciting spin through the waves in a speed-launch, with no dust in the air, or the familiar "arm of the law" standing in the middle of the road, demanding that you stop until you are relieved of your burdensome charge, to become intoxicated with its pleasures, and an earnest desire to become the possessor of a launch as early as possible.

The moderate priced family launch is in more general use, and is found in numbers in all large cities where there are water facilities. New York, alone, has upwards of 10,000 power boats of various types; Boston, 4000, and other large cities in proportion to their size,



varying in price from \$200 up into thousands. Averaging the price at about \$600 per boat would give a total of \$18,000,000 invested in motor boats.

Not only have large sums been invested in the launches, but commodious and attractive club houses have been built by the hundreds, many of them on an expensive scale, not only providing means for temporary accommodation, but being arranged for entertainment on the same plan as any city club. Hundreds of small lakes throughout the country, whose shore values were practically worthless until the advent of the motor boat, have suddenly become popular resorts with attractive cottages and bungalows around them, to each one of which the motor boat is the most important part of the equipment.

The improvements in the Erie Canal through New York State, and the various channels connecting the inland waterways along the Atlantic Coast with the several canals connecting, indirectly, Lake Michigan with the Mississippi River, make it possible to cruise around and across the entire eastern section of the United States. The projected canal from Lake Erie to the Ohio River will form another important connecting link in the chain of beautiful rivers and lakes that are lined on



OUT FOR THE AFTERNOON IN MOTOR RUNABOUT. THE PICTURE IS USED THROUGH COURTESY OF AUTOCRAFT CO.



CLUBS

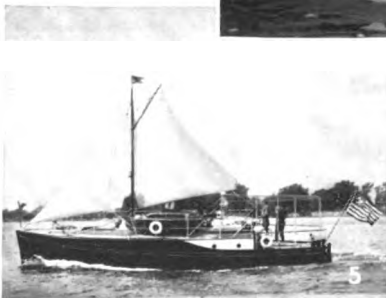
One of the many palatial nests of the "water bug." It is estimated that there is nearly \$500,000,000 invested in pleasure craft and club houses in this country. The total which the Government has appropriated for waterway improvements is \$700,000,000.

HYDROPLANES

The boating season just drawing to a close was a most notable one: records of speed and endurance were numerous smashed. The hydroplane is showing wonderful development, but much is yet to be desired for reliability and endurance of this high-speed craft.

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William Levick, N. Y.

Smaller pictures
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SPEEDY ONES FOR 1912

MOTOR CRAFT WITH EXPRESS-TRAIN SPEED

- 1 The fastest boat in the world—*Baby Reliance III.*, owned by J. S. Blackton of New York—which made a new world's record of 53.73 miles per hour, going down stream on the Mississippi. The craft is a 20-foot hydroplane, and its power plant is a 275 horsepower VanBleck engine.
- 2 Twenty-foot hydroplane, *Baby Reliance II.*, also owned by J. S. Blackton, powered with an eight-cylinder 150 horsepower Sterling engine. She was the fastest of the American cup defenders, and averaged 47.37 miles over a five-mile course.
- 3 *Tech, Jr.*, owned by Colonel Dupont of Wilmington, Del., figured prominently in speed trials. Note rudder amidships, which is said to prevent skidding.
- 5 *Dream*, winner of the 710-nautical-mile race from Philadelphia to Bermuda. She is 40 feet in length with 18 horsepower standard engine.
- 6 *Thistle*, winner of many cruiser races in 1912. She is 40 feet long and has a 40 horsepower Sterling engine.

each side with delightful scenery and an occasional large city, in all of which there are club houses for yachtsmen (for every city of any importance has one or more) where the touring parties are always welcome. The yachtsman's cap, wherever it is found, is the insignia of good fellowship, and one is impressed on visiting the various clubs, that each is trying to outdo the other in hospitality.

The same general interest in motor boating exists on the Western Coast, but is confined more or less to local districts, as in Puget Sound, San Francisco Bay and other large protected harbors and inland lakes, the conditions for extended cruising, as in the East, being limited to such bays and the connecting rivers.

Like all organizations that are formed principally for sporting and pleasure, the boat clubs have their quota of members who are imbued with the spirit of excitement, and racing events are held in districts, in which several clubs take part, and the friendly rivalry that exists has resulted in the development of specially constructed racing launches that compare favorably in speed with the average automobile. In several sections of the States, associations of clubs are formed for the purpose of conducting such events, and large sums of money are spent each year in the building of both engines and hulls for the special occasions, for the launches that enter the highest speed class. At such meetings, races are usually held for the various classes—the family launch, the runabout and cabin cruisers; but interest always centers in the speed boat races, in which man's skill has been taxed to the utmost, not only in the building of the boat and engine, but the operation as well.

The hydroplane type, as shown on opposite page, at present holds the "blue ribbon" as queen of the racers, as there are a number of them that have a record of approximately fifty miles per hour.

Another notable and extremely important feature in motor boat racing, as com-

pared with all other races of a similar form, is the almost total absence of fatalities. No form of racing is more exciting or exhilarating, and while there are occasional accidents to boat or motor, there are no records of loss of life or injury in connection with them.

In commercial life, motor craft is coming into prominence, and thousands are now in use plying their different forms of trade, excursion boats, ferry and fishing boats, etc., stimulated in the beginning by that old longing for the pleasure of water sports, which played its important part in the truancy of youth that we all remember so well, and bringing with it those natural instincts for Nature's greatest health preserver, "outdoor life in the pure air."

Due credit must be given to the improvement of waterways, which has played

its part in this progress. Not only have various forms of protection and guidance been provided in adequate waterways, but beautiful rivers and valleys, unnavigable on account of their various obstructions, have been made accessible for boating. A striking instance of this is in Texas, on the Colorado River, known

for its great size and picturesque scenery. The city of Austin has recently constructed an immense dam across the river, which provides ample water adapted to motor boating, for a continuous stretch of forty miles, and great preparations are now being made for the celebration of its completion. The same may be said of Indianapolis, Ind., which, until recently, boasted of only a small stream running through its suburbs, which is now a navigable stream dotted with cottages on either side and boats on the water.

Jas. B. Hammond, the millionaire typewriter manufacturer, at the age of seventy-three, started on a several years' cruise in his beautiful launch, *Lounger II.*, claiming to have at last discovered the "Fountain of Youth," and, judging from the vast numbers who are following his example, we are led to believe his statement correct.



Courtesy Autocraft Co.

CABIN CRUISER, DESIGNED BY FREDERICK K. LORD, N. A.

WINNERS IN IMPORTANT MOTOR BOAT RACES, 1912*

BOAT	OWNER	EVENT	MILES	TIME	BOAT	OWNER	EVENT	MILES	TIME
Baby Reliance I	J. S. Blackton	Mississippi Valley 20-foot	15	14-10	Big Balaam	F. Bailey	Class B, Nat'l Championship	10f	1-13-22
Baby Reliance II	J. S. Blackton	Mississippi Valley 32-foot	20	15-00	Peter Pan V	J. Simpson	Class C, Nat'l Championship	10f	0-53-16
Baby Reliance III	J. S. Blackton	Mississippi Valley 26-foot	20	13-20	Peter Pan Sr	F. C. Havens	Motor Yacht Championship	22 1/2	1-50-41
Respite	J. C. Pedersen	Mississippi Championship	20	14-27	Alfred S	H. Soldner	Cabin Launch Champ F	22 1/2	1-27-57
Thistle	J. H. Wallace	New York-Albany	215	10-11-30	Valiant II	J. Sauer	Cabin Launch Champ G	22 1/2	1-15-50
Dream	C. L. Wallen	New York-Block Island	300	10-45-00	Elise	J. Hick	Open Launch Champ J	22 1/2	2-23-20
Alfred S	H. Soldner	Philadelphia-Bermuda	719	17-50-15	Baby Reliance II	J. S. Blackton	British Internat 1st Race	10f	0-18-10
Marguerite	A. K. Lennig	New York-Cornfield	18 1/2	14-28-00	Maple Leaf IV	M. Edgar	British Internat 1st Race	10f	1-00-25
Chelwood	R. K. Lennig	Delaware River	100f	24-15-15	Swastika	J. Wolff	Pacific Free-for-All	20	0-47-40
Baby Reliance II	J. S. Blackton	Chicago 26-foot	14	0-24-14	Oregon Wolf	J. Wolff	Pacific Free-for-All	20	0-37-05
Baby Reliance III	J. S. Blackton	Chicago 32-foot	18	0-24-14	Vogler Boy	J. S. Blackton	Pacific 26-foot	20	0-40-20
Baby Reliance II	J. S. Blackton	Chicago 40-foot	18	0-20-50	Baby Reliance II	J. S. Blackton	Great Lakes 32-foot	20	0-50-15
P. D. Q. II	A. G. Miles	Wrigley Championship	35	0-15-40	Baby Reliance II	J. S. Blackton	Great Lakes Free-for-All	20	0-10-35
Heloise	A. G. Gooderham	Gold Challenge Cup	32	0-52-12	Baby Reliance II	J. S. Blackton	Interlake Championship	25	0-43-25
Full Moon	K. Walkem	Pacific Long Distance	150	1-11-10	Gadfly III	H. B. Greening	International Handicap	15	0-40-11
Vita, Jr	Mrs. J. S. Blackton	Red Bank Championship	20	48-00	Al Pamel, Jr	R. Smith	Delaware River Championship	15	1-18-01
Vita	Mrs. J. S. Blackton	Class A, Nat'l Championship	10f	1-23-23					

*Indicates nautical miles

WINNERS IN IMPORTANT SAILING RACES, 1912*

BOAT	OWNER	CLUB	MILES	TIME	BOAT	OWNER	CLUB	MILES	TIME
Gray Jacket	F. C. Noble	Atlantic	6	1-40-11	Daffodil	D. H. Morris	Manhasset Bay	15 1/4	0-00-40
Careless	R. Rummell	Atlantic	6	1-51-48	Duchess	C. Raney	Manhasset Bay	0	5-11-55
M & F. H.	Cann & Merchant	Atlantic	6	1-43-11	Mist	H. T. Hornidge	Manhasset Bay	0	0-07-00
Moose	R. Dingman	Atlantic	4	1-08-18	Festina	A. B. Alley	Manhasset Bay	0	5-27-40
Navy	J. DeForest	Sewanhaka	10	5-14-43	Kanaka	W. F. Clark	Manhasset Bay	0	5-17-58
Pint	H. S. Buell	Kneckerbocker	10	1-40-55	Scylla	W. H. McLaugh	Manhasset Bay	0	5-10-07
Festina	A. C. Alley	Kneckerbocker	10	2-13-48	Carlew	E. A. Sierch	Manhasset Bay	0	5-17-10
Duch	A. C. Andrews	Kneckerbocker	10	2-01-10	Little Dipper	C. G. A. Garry	Manhasset Bay	0	5-16-10
Marie Jos	P. B. Dunvan, Jr	Kneckerbocker	10	2-17-57	La Rochelle	R. E. Waldorf	Manhasset Bay	0	1-23-50
Vanalia	W. V. Giffin	Kneckerbocker	10	2-01-14	Irolita	R. E. Waldorf	Larchmont	10	5-46-21
Nille Bass	P. W. Mallory	Kneckerbocker	10	2-19-12	Miladi	Geo. W. Scott	Larchmont	23	1-10-21
Cliphra	C. D. Mallory	Kneckerbocker	10	1-49-35	Wynome	H. S. Noble	Larchmont	10	5-14-38
Red Wing	R. B. Budd	Kneckerbocker	10	1-58-12	Melora	S. Wainright	Larchmont	21	1-01-38
Amanita	L. E. Fountain	Kneckerbocker	10	2-05-10	Alera	J. W. & G. P. Alker	Larchmont	11	1-53-18
Ada	A. E. Fountain	Kneckerbocker	10	2-11-01	Essex	J. C. Mitchell	Larchmont	15 1/2	2-00-02
Little Dipper	G. A. Garry	Kneckerbocker	6	2-13-01	Duchess	C. Raney	Larchmont	11	2-13-01
Hornet	G. G. Paxton	Kneckerbocker	6	2-33-01	Amada	B. R. Stoddard	Larchmont	11	2-08-45
Noroid	G. G. Fuller	Kneckerbocker	6	2-58-10	Kanaka	W. F. Clark	Larchmont	11	2-10-40
Tautog	G. G. Fry	Kneckerbocker	6	2-11-12	Whiff	W. R. Manny	Larchmont	11	2-13-33
Go-Go	F. C. Noble	Bensonhurst	12	2-23-28	Turquoise	J. S. Morgan, Jr	Larchmont	11	2-22-00
Gray Jacket	R. E. Sauvage & Geer	Bensonhurst	12	2-10-31	Sevilla	E. A. Sierch	Larchmont	11	2-10-00
Careless	R. Rummell	Bensonhurst	6	1-15-21	Cynsure	H. Ford	Larchmont	5 1/2	1-12-10
Pike	C. M. Camp	Bensonhurst	6	1-10-34	La Rochelle	F. W. Waldorf	Larchmont	5 1/2	1-42-01
Sunlew	E. F. Luckenback	National	6	2-01-26	Tautog	G. G. Fry	Larchmont	5 1/2	1-42-01
Gunsle	W. H. Hall	National	6	2-10-10	Hamburg	W. H. York	Larchmont	11	1-42-18
Zurrah	R. E. Dingman	National	12	1-11-24	Gray Jacket	F. C. Noble	Larchmont	12	1-12-10
Constance	Harold Spink	Eastern	20	1-41-00	Joy	R. E. Sauvage & Geer	New York Yacht Club	12	1-54-53
Handy Andy II	C. L. Dane	White Bear	20	1-10-00	Careless	R. Rummell	New York Yacht Club	12	2-01-15
Imp	S. L. Landon	White Bear	20	1-17-45	M & F. H.	M. & F. H.	New York Yacht Club	12	2-13-47
Vanalia	W. B. Dunvan, Jr	Sewanhaka-Cor	15 1/4	1-15-45	Moose	R. E. Dingman	New York Yacht Club	8	2-18-20
Melora	H. S. Noble	Indian Harbor	15 1/4	5-47-38	Okes	J. A. Muhlstedt	Manhasset Bay	6	5-02-17
Corinthian	H. C. Smith	Manhasset Bay	15 1/4	5-47-38	Go-Go	J. A. Muhlstedt	Manhasset Bay	6	4-10-14
His	W. H. Busk	Manhasset Bay	15 1/4	5-14-51	Momo	W. E. McKinnon	Edgewood	6	2-50-04

Gilt Edge	W. E. Simmons	Edgewood	3-45-14	Hen	Geo. Nichols	Seawanhaka-Cor.	1-18-50
Rube	Peckham	Edgewood	2-02-50	Margaret	Haight Bros.	Unaqua-Cor.	1-19-20
Dorothy	W. H. Wood	Edgewood	1-20-12	Manitou	Chas. Molinieux	Unaqua-Cor.	1-20-12
Spider	Hendon Chubb	Atlantic	2-21-01	Nutmeg	A. C. Jones	Squantum	0-51-25
Joy	Le Sauvage & Geer	Atlantic	2-21-01	Lethe	Hollis Burgess	Squantum	0-51-51
Carless	R. Rummel	Atlantic	2-19-22	Eleonor	W. L. Jefferson	Squantum	0-50-30
Suffragette	Platt & Tiemann	Atlantic	2-19-22	Darwell	L. M. Whitmore	Squantum	0-50-50
Cyrie	C. L. Atkinson	Atlantic	2-21-14	Martza II	S. H. Porter	Squantum	0-58-16
Killie	B. Jacobs	Stamford	1-51-01	Dorsey	L. Govin	Squantum	1-04-15
Irolta	E. W. Clark	New York Yacht Club	2-21-50	Scater	E. W. Murphy	Squantum	0-50-55
Aurora	Cornelius Vanderbilt	New York Yacht Club	2-13-50	Barbara	J. J. Blaney	Squantum	1-00-15
Madora	H. G. S. Noble	New York Yacht Club	2-26-13	Edjacko II	C. R. Hanson	Gloicester	1-00-15
Cara Mia	S. Wainwright	New York Yacht Club	1-28-24	Asprey	A. Flye	Gloicester	1-18-27
Nepsi	J. DeForest	New York Yacht Club	2-48-26	Wandel	A. C. Leonard	Gloicester	1-18-27
Maira	Clarkson Cowl	New York Yacht Club	2-52-20	Tid II	R. C. Hall	Gloicester	1-10-12
Pleayune	Al Chase	Corinthian	1-31-00	Miami	R. C. Hall	Gloicester	1-10-16
Lolita	C. H. W. Foster	Corinthian	1-38-00	Durr	E. C. Whitney	Stamford	1-14-00
Amoret	H. S. & C. B. Wheelock	Corinthian	2-28-17	Alvoro	C. G. Davis	Seawanhaka-Cor.	1-51-02
Tobasco	J. S. Proctor	Corinthian	2-28-17	Alie	J. H. Ives	Benthurst	1-51-03
Dorothy	B. L. Bachelder	Corinthian	2-28-17	Blue Bell	J. Mayhew	Benthurst	2-08-43
Saraeen	R. Winsor, Jr.	Beverly	2-13-18	Cyrie	R. D. Atkinson	Benthurst	2-08-43
Fudge	Beeman	Lakewood	2-13-18	Youse	R. D. Atkinson	Benthurst	1-11-55
Killie	H. Spalding	Lakewood	2-22-15	Flicker	A. E. Henderson	Benthurst	1-11-55
Jerry	B. Jacobs	Stamford	2-18-08	Molly	O. Howes	Washington Park	4-10-15
Isalena	Geo. M. Pynchon	New Rochelle	2-44-53	Jacquemal	G. M. Pynchon	Lavin Hill Club	4-25-55
Cara Mia	R. L. Garthbert	New Rochelle	2-44-53	Isalena	G. M. Pynchon	New York Yacht Club	2-58-11
Caprice	A. H. Norris	New Rochelle	2-10-38	Corinthian	H. C. Smith	New York Yacht Club	2-58-28
Daffodil	F. Ewing	New Rochelle	1-17-54	Caprice	R. V. Ellis	New York Yacht Club	2-52-00
Amada	E. R. Stoddard	New Rochelle	2-10-38	Vandalia	W. B. Duncan, Jr	New York Yacht Club	1-06-27
Luelaw	E. F. Bradley	New Rochelle	2-48-38	Irolta	E. W. Clark	Eastern	1-10-54
Hambryll II	M. M. Goldschmidt	New Rochelle	2-17-11	Princess	H. L. Maxwell	Eastern	1-10-54
Natoma	W. F. Clark	New Rochelle	2-17-11	Tammany	H. L. Maxwell	Eastern	4-25-52
Okeamah	A. B. Clements	New Rochelle	1-52-57	Dorello	Foster	Eastern	4-25-52
Seylla	J. S. Morgan, Jr	New Rochelle	1-40-17	Humbog	L. G. Spence	Eastern	4-25-52
Arius	L. Parsons	New Rochelle	2-28-17	Alphora	C. D. Mallory	Eastern	4-25-52
Snug	L. Huntington	New Rochelle	1-51-22	De De	S. Shethar	Nahant Dory	2-07-21
Loon	A. W. Knaapp	New Rochelle	2-10-20	Drena	G. M. Pynchon	Riverside	2-11-17
Ivy	C. C. Converse	New Rochelle	1-48-52	In U	H. C. Smith	Riverside	2-11-17
Go Go	B. A. Maekinnon	New Rochelle	2-10-20	Corinthian	J. V. Mahstedt	Riverside	2-11-17
Joyant	Indian H Z Club	Manhasset	0-14-17	Okoe	E. Radolph	Riverside	2-11-17
Alice	C. Davis	Manhasset	2-13-27	Sally JX	B. R. Black	Riverside	2-11-17
La Cubana	J. H. Ives	Atlantic	2-10-11	Amada III	Z. D. Hopkins	Riverside	2-11-17
Gunda	W. H. Hall	Atlantic	2-18-45	Yukan	N. D. Weir	Riverside	2-11-17
Cyrie	R. L. Atkinson	Atlantic	2-12-43	Turquoise	G. S. Morgan, Jr	Riverside	2-11-17
Mouse	C. R. E. Dingman	Atlantic	2-07-55	Acc	Gilbert Bros.	Riverside	2-10-61
Chewink	O. W. Swenson	Winthrop	1-22-15	Sarama	A. C. Hanan	Riverside	2-10-61
Stinger	W. O. Gay	Nahant Dorrs	1-17-20	Arcthusa	F. C. Noble	Riverside	2-10-61
Curlew	E. Wilson	Jamaica Bay Y R A	2-40-10	Gray Jacket	Le Sauvage & Geer	Riverside	2-10-61
Elvira	J. Anderson, Jr	Jamaica Bay Y R A	2-40-10	Blue Bell	Z. C. Mayhew	Riverside	2-10-61
Siren	G. E. Merritt	Jamaica Bay Y R A	1-55-57	V. & F. II	E. D. Camp	Riverside	2-10-61
Italia	Geo. Lee	Eastern	2-21-50	Elizbeth II	E. C. Cornell	Riverside	2-10-61
Tobasco II	F. S. Proctor	Eastern	2-27-11	Caddie	E. W. Carr	Riverside	2-10-61
Suaw	John Lawrence	Eastern	1-58-52	Sinbad	Geo. Brown	Riverside	2-10-61
Elena	M. F. Plant	Eastern	1-58-52	Nutmeg	O. L. Brambach	Riverside	2-10-61
Princess	Demarest Lloyd	Eastern	10-23-10	Sintram	O. L. Brambach	Riverside	2-10-61
Wanderer VI	W. E. Butler	Eastern	2-10-15	Special		Riverside	2-10-61
Nomo	C. F. Tillinghast	Bristol	2-11-58	Alie		Riverside	2-10-61
Little Rhody	C. F. Tillinghast	Bristol	2-20-25	Amada		Riverside	2-10-61
Emblem	Latham	Bristol	1-00-10	Corinthian		Riverside	2-10-61
Usona II	A. L. Lincoln	Hingham	2-15-00	Okoe		Riverside	2-10-61
Blue Grass	D. O'Hara	Manchester (Mass.)	2-11-00	Gray Jacket		Riverside	2-10-61
E. Jiarco	S. E. Raymond	Gloicester	2-20-15	Blue Bell		Riverside	2-10-61
Osprey	C. R. Hanson	Gloicester	2-14-20	V. & F. II		Riverside	2-10-61
Weasel	E. A. Flye	Gloicester	2-11-01	Elizbeth II		Riverside	2-10-61

The National Rivers and Harbors Congress

of the United States of America

will hold its

Ninth National Convention

Washington, D. C.,

December 4th, 5th, 6th, 1912

Opening Address by
President William Howard Taft

Convention Hall
New Willard Hotel

THE rapidly expanding commerce of the country, the shortage of cars, already evident and certain to become acute, and the approaching completion of the Panama Canal, all demand that our waterways be speedily improved and put into condition to bear their full share of transportation burdens.

To assist in bringing about the adoption of a governmental policy which will insure this result we cordially invite your attendance at the Convention. Mayors of cities and officers of Commercial Organizations have authority to appoint delegates, and we earnestly request that you will use your influence toward having the commercial and manufacturing interests of your city and section strongly represented.

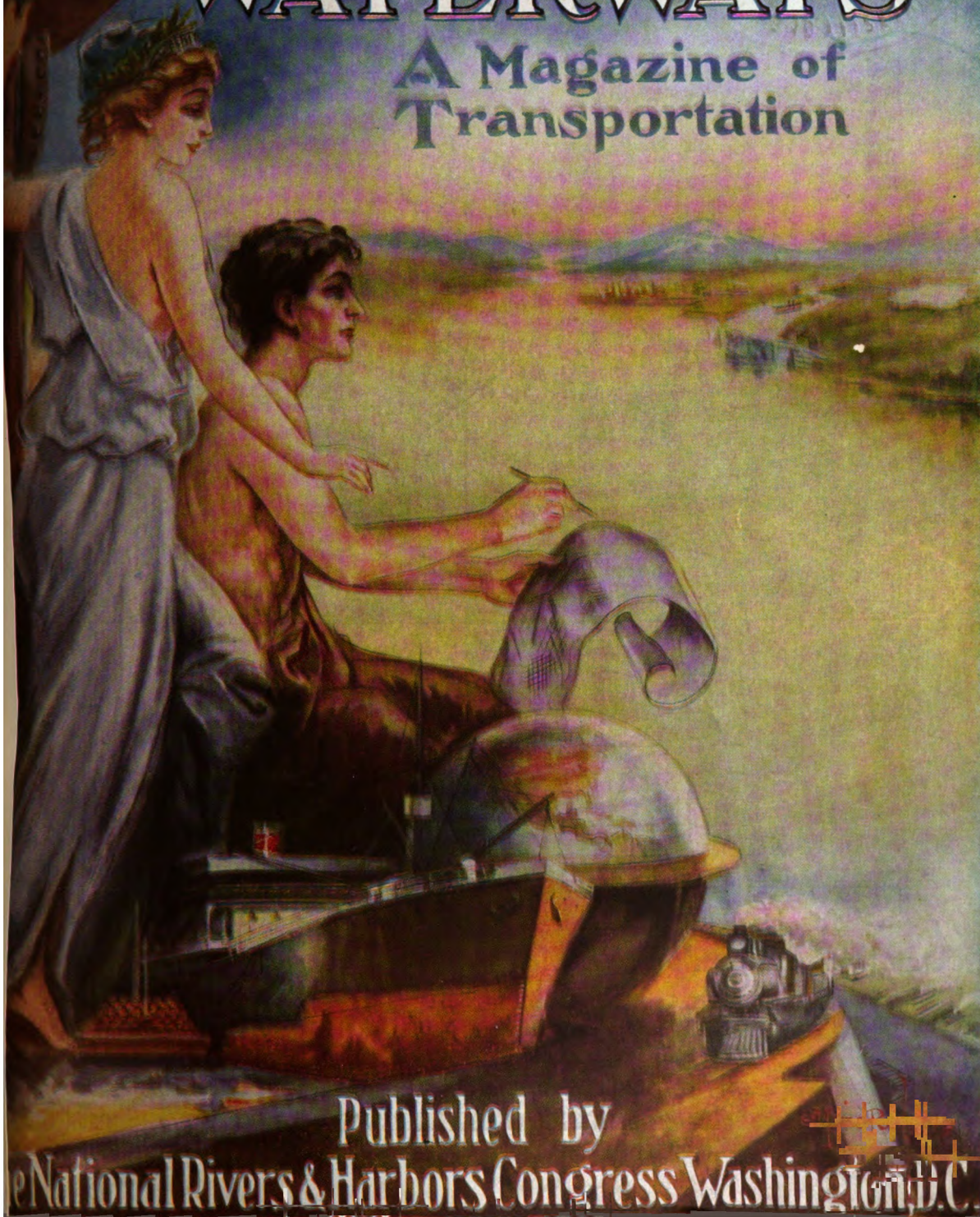
National Rivers and Harbors Congress

JOSEPH E. RANSELL, President

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NATIONAL WATERWAYS

A Magazine of
Transportation



Published by

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VOL. 1

No. 2

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*



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NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I

APRIL, 1913

NUMBER 2

THE SIXTY "RIOS" OF THE AMAZON

By J. F. ELLISON

"EVERYBODY knows of the Amazon; many, perhaps, know of the Madeira; very few Brazilians, themselves, and few, even, of the rivermen know all of the fifty or sixty 'rios' tributary to one or the other of the main streams, and all, in turn, tributary to the Amazon." So observes Captain Ellison, the veteran Ohio River steamboat man, who, by virtue of his post as general manager of the greatest inland transportation system in the world, is virtually in control of Amazon navigation.

THE assertion that the Amazon and its affluents cover more miles of navigable rivers, and extend farther from the coast line than any other river system on the planet, may be proved by a look at any atlas. The other assertions made by the writer will not be so easy to verify, and will have to be either accepted as correct, or condemned as false.

The first of these, and which will be the hardest for the average man to believe, is that the Amazon and its chief tributaries, lying as they do under the shadow of the equatorial line, are in a temperate climate; it is certainly never intemperate in coolness, and compares very favorably with the heat "jags" that the Ohio, Mississippi and Missouri River valleys go on, regularly from June to September, 100 to 105 degrees of heat being frequent there. The city of Pará, at the navigable mouth of the Amazon and eighty miles from the

equator, has never known a higher figure than 95 degrees, and in the ten months that the writer has been located there the range has been from 85 to 90 degrees. San Gabriel, on the Rio Negro, lies exactly on the line and is reported to be slightly cooler than Pará.

As all our ideas are those of comparison, it appears that we are justified in using for the tropics the word temperate, at least in describing the Amazon Valley climate.

Time, space, inability to spell some of the names and the very great doubt that if they were spelled correctly, they could be pronounced properly, is cause for mentioning only a few of the more important rivers forming the Valley of the Amazon.

Everybody knows of the Amazon; many, perhaps, know of the Madeira, for on that river, 1,750 miles from the coast, one of the wonder railroads of the world

has been built by Americans. A few people outside of Brazil know something of the Solimoes, the Purus, the Juruá, and the Negro; very few Brazilians, themselves, and few, even, of the rivermen, know all of the fifty or sixty other "Rios," tributary to one or the other of the main streams, and all, in turn, tributary to the Amazon.

In considering the statements which follow, the fact should not be lost sight of that it is an American boatman, accustomed to American river boats and ways, that is making them.

The main control of the navigation of the Amazon and its affluents has rested for forty years and, until August of last year, in the hands of an English company, which means that English-built boats have, with but a very few exceptions, been the only kind of boats used; being willing always to "give credit where credit



Harris & Ewing

J. F. ELLISON

is due," testimony is cheerfully given that our English cousins build magnificent ships for deep sea service, splendid lake and bay steamers, but if, in all their history as a maritime people, they ever built a good, serviceable light-draft, river steamboat, personal observation, covering a fairly wide range of territory and a vastly wider field of reading, has never beheld such.

For the Amazon and lower reaches of the important tributaries the English boats do fairly well, but in the extreme Altos Rios, where in dry seasons the channels get to six feet or less, they are not "in it" and the American sternwheeler, the premier light-draft boat of the world, is now, for the first time in the history of North-Brazil navigation, to be used and will, undoubtedly, penetrate farther into the upper reaches of the rivers than any other steam craft has ever gone; that they will bring new rubber



By courtesy Pan-American Union

THE RECONSTRUCTION OF THE
IN SPEAKING OF BRAZIL WE ARE ALL LIKELY TO CONJURE UP PICTURES OF TROPICAL FORESTS
THE ABOVE WATERFRONT WHEN COMPLETED WOULD

districts into the market is a foregone conclusion. As for the boatmen, they are not like Kentucky whiskey, which is all good, but they compare well with their class in the United States.

The Subvention Edital, under which sixteen different lines of the Companhia Navegação do Amazonas operate, calls for an annual run of 363 550 miles, and this covers line runs only and not voyages into the Altos Rios. Right here some of our old Mississippi or Ohio River friends will smile and shake their heads skeptically. The answer is, if you don't believe, come down for a little trip of six or eight months, go over the lines, and then be prepared to apologize.

The company named owns and operates sixty-two steamers of the combined freight and passenger class, the total tonnage of the fleet by government measure being 39,000 tons, and, in addition, there are forty-five other steamers registered at Pará and Manaus under private ownership; these, in addition to a vast number of tugs, lighters, barges and launches make up the fleet of commercial steamers.

No argument is needed to show that there must be a considerable traffic to enable the number of steamboats named above to pay their owners a satisfactory return on the money invested. Up stream, the tonnage consists largely of merchandise and foodstuffs. Down stream, rubber, Brazil nuts and cocoa form the bulk of traffic, with rubber leading in quantity and value. It is conservatively estimated that for every ton of rubber that comes down the river, twenty-five tons of merchandise must go back up to supply the people who are in the forests gathering borracha. So long as the Pará rubber remains near its present price of \$1.25 per pound, there is no question of supplies coming in, and the statement is made with some regret that ninety-five per cent. of all merchandise is imported. These imports come from Germany, England, the United States, Portugal, Spain and France. As these nations are named in the order of their position in the foreign trade of Brazil, it will be seen that we rank third and if proper effort be put forth and ships and banking facilities be



CITY'S WATERFRONT AT PARÁ

AND VIRGIN WILDERNESS INSTEAD OF FLOURISHING CITIES AND A PROSPEROUS PEOPLE DO CREDIT TO ALMOST ANY OF OUR SEAPORTS

provided, the United States should soon rank first of all countries in the volume of goods exported to this part of Brazil.

If the plans of one man of master mind, and that particular man an American, can be worked out, the future traffic and industrial possibilities for the Amazon Valley are marvelous. With a soil as fertile as the Mississippi Valley, a climate quite as good as the lower portion of that valley, there remain but two important questions to be solved. Immigration first, and the contribution must be of a class who are used to work in a warm, damp climate.

Plans are now perfected to give to Amazonas cheaper internal transporta-

The port works of Pará have been completed and every device for the quick, safe and economical transfer of freight from docks and deep sea ships to river steamers has been installed. As a matter of fact, the docks at Pará have few equals and no superior along the entire seaboard of North America. All this has been done, not alone to exploit the present resources of the valley, but to help its present and future inhabitants to increase its natural wealth.

The prediction is made that the future traffic of the Amazon Valley will justify all energy and money that Percival Farquhar has so freely given to it, and



PARÁ'S STATE-ENDOWED THEATRE. SET IN A BEAUTIFUL PARK—ONE OF THE REFINEMENTS OF THE EQUATORIAL CITY

tion than has ever prevailed. A powerful steamboat company, that has long controlled rates, has been purchased. New and larger steamers, better adapted to handle freight, have been ordered in Holland and are now being delivered at Pará, coming across the ocean under their own steam. From the States have come seventeen light-draft boats that will carry far into the interior and make possible a sweeping reduction of transportation cost.

The Madeira-Mamoré Railroad has been built around the Falls of the Rio Madeira, giving to Bolivia the first easy, direct and safe route that country has ever had to and from the markets of the world.

the date is not far distant when there will be carried on the world's greatest river a commerce that will tax to the utmost a vastly larger commercial fleet than the present one, for the time when this part of Brazil will have railroads to compete with and throttle water transportation is too far in the future for the eye of mortal man to see, or the mind of men of the present generation to conceive. If a personal word be allowed, let me say, in concluding, that after fighting so many years for river improvements, it is rather a pleasant sensation to be connected with a river transportation proposition that does not require government appropriations.

THE EMPIRE DRAINED BY THE OHIO

By ALFRED BETTINGER

SHIPMENTS from Pittsburgh to Cincinnati by river cannot be reshipped to an interior point by rail, except at local rates which * * * * * consume the advantage of the cheap water rate; while the same shipment, if made by rail to Cincinnati, will be forwarded by another road upon a proportionate division between the two roads of a through rate." Thus does Mr. Bettinger summarize the evil besetting the commercial activity of the "land of abundance" watered by the Ohio for one thousand miles.

AT Pittsburgh, the Allegheny River, rising in northwestern New York and flowing south, and the Monongahela, having its source in the northern part of West Virginia and flowing north, meet and form the Ohio River. The uniting streams pass through territory abounding in natural resources. The Monongahela has for many years been slack-watered for about 125 miles, and its banks are fairly teeming with industrial life, the commerce on this river exceeding annually 10,000,000 tons. The Allegheny has not been improved, except for a very short distance, further improvement being suspended because a number of ancient bridges at its mouth obstruct navigation by their insufficient height, and the indiscriminate, irregular placing of their piers. Though railroads flank this river on either side, the natural resources of its valley still await their real development.

The Ohio, which flows for 1000 miles in a southwesterly direction to the Mississippi at Cairo, forms the boundary line between Ohio, Indiana and Illinois on the north and West Virginia and Kentucky on the south. The valley which it drains is greater in extent than the German Empire and is the abiding place of more than fifteen millions of people. It contains four-fifths of the known coal supply of the country, and it is said that no coal found north of the Ohio River is suitable for the manufacture of iron and steel.

The center of population has since 1840 traveled on a line parallel with it and has never been many miles from its shores.



Benjamin

The center of manufacturing industries has, also, for the past fifty years been in this valley.

The Ohio River was the great highway for the early settlers of the Middle West, and, until within the past thirty years, in connection with its own tributaries and with the Mississippi, which it joins at Cairo, it was the greatest commercial highway in the country.

In 1842, for example, the entire steamboat tonnage employed in the United States was 219,994 tons, over half of which plied on our western rivers, the eastern coast ports being second and the Great Lakes third. At the same time the steamboat tonnage employed in the Ohio and Mississippi Valleys exceeded the entire tonnage of the British Empire.

Notwithstanding that railroads now skirt both banks, from source to mouth, the Ohio still floats an annual commerce of 10,000,000 tons, and 90 per cent. of the commerce that goes down the Mississippi to New Orleans comes out of the Ohio. This results from the large shipments of coal from Pennsylvania and West Virginia, which are made in barges towed by powerful sternwheel steamboats, of which the *Sprague* is the largest. The banner trip of this steamer, made from Louisville to New Orleans, was 57,500 tons. It is not unusual for steamers to bring into the Cincinnati market upon a freshet 250,000 tons of coal and finished steel products within a week. To move this quantity by rail would require 5,896 cars of 45 tons each, made up into 146 trains of 30 cars each, drawn by as many locomotives. No railroad, how-

ever well equipped, could perform this service inside of sixty days without excluding its regular traffic, to say nothing of its inability to assemble such a quantity of traffic at either of its termini. This illustrates the illimitable capacity of river transportation.

For many years our Government has expended money in more or less desultory efforts to improve the navigation of the Ohio River. But, upon a thorough examination and survey made in 1907 by a

again. The locks are 110 feet wide (the same as those at the Panama Canal) and 600 feet long.

This type of dam has been adopted because the Ohio River, for a large but uncertain portion of the year, naturally far exceeds a depth of nine feet, during which time passage through locks would be impossible by reason of their being flooded, or would cause unnecessary detention.

On the other hand, there are periods, equally uncertain in point of time and



AN EVER-BUSY SCENE DOES THE OHIO RIVER LANDING STAGE AT CINCINNATI PRESENT. THE KENTUCKY SHORE IN BACKGROUND

Board of United States Engineers, of which Col. William L. Sibert, now one of the Panama Canal Commissioners in charge of the construction of the Gatun dam and locks, was the head. Congress adopted a plan of canalization comprising 54 locks and movable dams, to provide a minimum depth of nine feet. The wickets of these dams may, within the space of two or three hours, be laid down upon the bottom of the river when the river is naturally of a navigable stage, so that boats may pass over them, instead of through the locks. When the river drops below a navigable stage the wickets may be raised

duration, when the river is far below nine feet in depth, and it is this fact that has rendered river transportation unreliable and the improvement described to be necessary. The estimated cost of the improvement is \$63,000,000, and about one-third of the work has been done.

In recommending the improvement, the Board of Engineers observes:

"The Board realizes that it is suggesting a plan of river improvement on a scale not hitherto attempted in this country, but it believes that there will probably be in the near future a popular demand for the improvement of several streams on such a

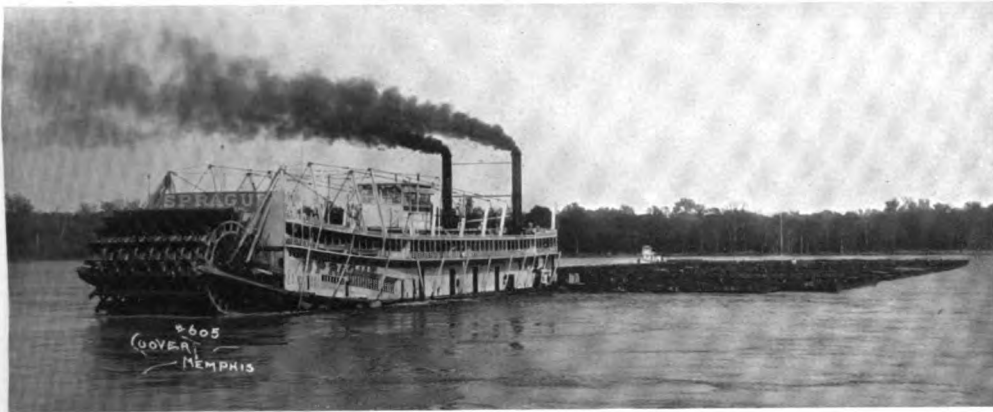
scale. On account of the large commercial development of its shores and its connection with the lower Mississippi, now maintained in a navigable condition, the Ohio River is, in the opinion of the Board, the one river of all others most likely to justify such work."

The attention of students of transportation is centered upon this improvement, to watch its effect upon river commerce.

There are those who maintain that the decline in river traffic is permanent; that the railroads are in every way more efficient and have, therefore, permanently supplanted transportation by river. These views are promulgated chiefly by persons

points. This method of competition is now prohibited by an amendment to the Interstate Commerce Law, which provides that when a railroad reduces its rate in competition with a water line, the same cannot again be restored unless, after hearing by the Interstate Commerce Commission, it is shown that the proposed increase is justified by changed conditions other than the elimination of water transportation.

The second cause is the refusal of railroads to honor, or issue, through bills of lading upon shipments made in part by water; or to agree upon a through rate as they do between themselves; or to make physical connection with water routes so

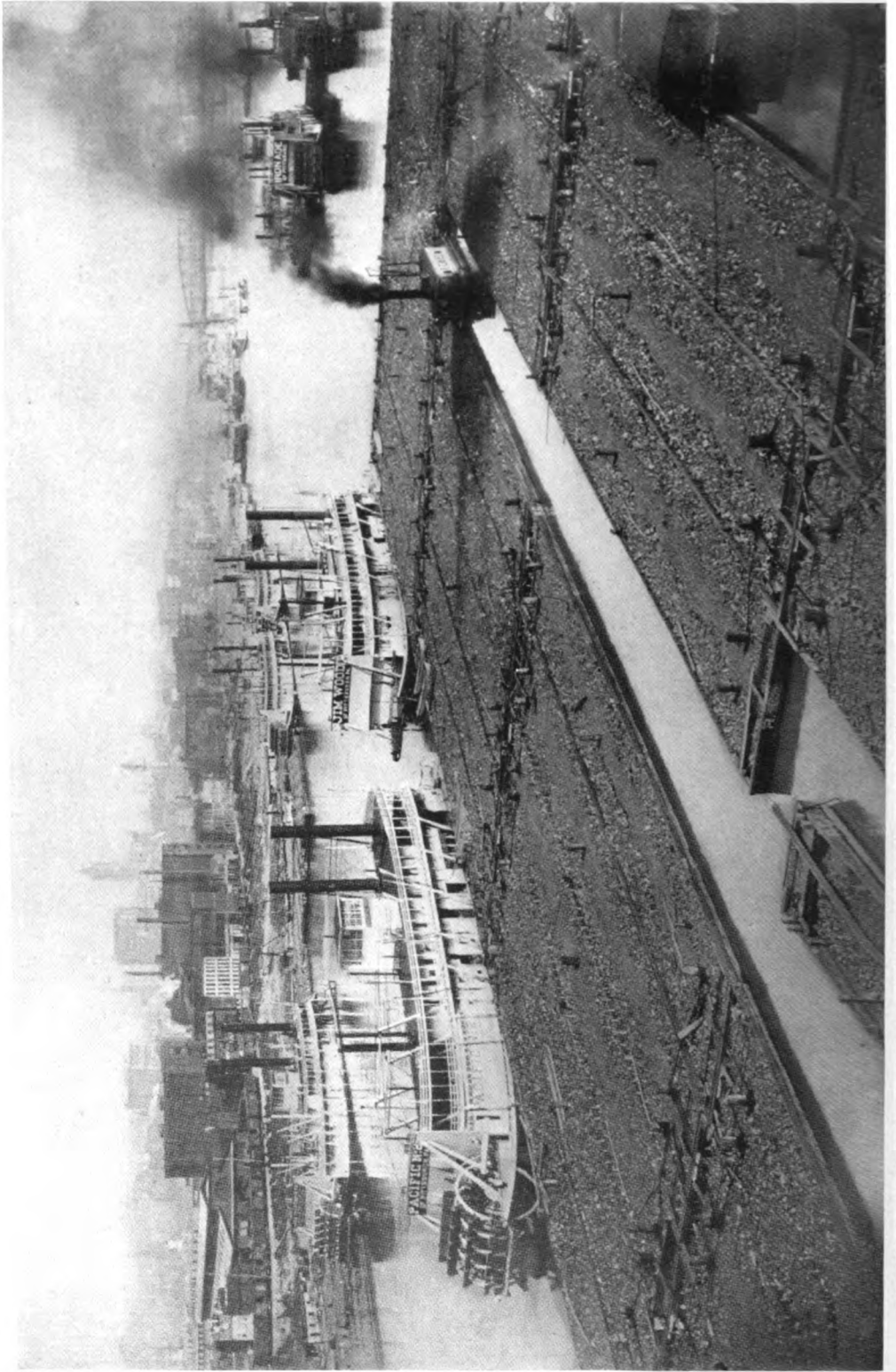


THE "SPRAGUE," WHICH UPON ONE OCCASION MOVED THE WORLD'S RECORD CARGO—51,570 TONS OF MERCHANDISE AND FUEL

interested in competing railroad lines, and are not shared by broad-minded railroad men generally. On the contrary, these, and others conversant with the subject, maintain that the demonstrated inability of the railroads to carry the increasing commerce of the country compels resort to our waterways and that the best interests of the people demand their improvement to make them dependable all the year round.

There are two chief causes which, in conjunction with periodical suspension of navigation by low water, have contributed to the decadence of river commerce. The first is that railroads have reduced their freight rates between competitive points far below the actual cost of carriage and then, when the river carrier had been driven out, have raised them again, the railroad in the meantime making up its loss by raising its rates between interior

as to facilitate and cheapen transfer from water to rail and vice versa. For instance, goods shipped from Pittsburgh to Cincinnati by river cannot be reshipped to an interior point by rail except at local rates which, with transfer charges, will consume the advantage gained by the cheap water rate; while the same shipment, if made by rail to Cincinnati, will be forwarded by another road upon a proportionate division between the two roads of a through rate. This serious hindrance will be removed when the new Panama Canal Law goes into effect, which amends Section 6 of the Interstate Commerce Act by a provision authorizing the Interstate Commerce Commission to establish through routes and maximum joint rates between and over water and rail lines, and to establish physical connection between the rail carrier and the dock or wharf of the water carrier, by directing either or



PITTSBURGH. "THE STEEL CITY." ENJOYS THE ADVANTAGE OF A RIVER FRONTAGE WHEREFROM COMES HER INDUSTRIAL SUPREMACY

both, according to the circumstances of the case, to lay connecting tracks. These provisions, together with uninterrupted navigation, will make the Ohio River and its confluent an integral part of the transportation system of the country.

If deep channels had been provided while the railroads were being extended and improved, river commerce would not only have been maintained, but would itself have contributed to a still greater commercial development than we have experienced. The intermittent, unreliable and uncertain navigation is the real and, properly considered, the only cause of the decline in water transportation. Other contributing causes herein mentioned are but the result of uncertain seasons of navigation, which, with dependable channels, would either have disappeared or would never have arisen at all. Indeed, but for the distinct advantages of cheapness, quick delivery and unlimited capacity of water transportation over that by rail, not a vestige of river traffic would be left. The survival of packet lines on all our Western rivers, and the development of coal transportation lines unique in cheapness and the volume of their deliveries in spite of long and uncertain seasons of suspension of navigation, are positive proof of the inherent advantages of river transportation. No railroad line similarly handicapped could survive the competition of its rivals.

Nor is it correct to attribute any portion of the decline to crudeness of the steamboat or to lack of thrift of steamboat men or managers, as is so often done. The steamboat in its type, motive power, tackle, equipment and accommodations has been constantly improved to take full advantage of the intermittently navigable river channels.

Alternating conditions of low and high water, swift currents, floating ice, fogs, faulty disposition of bridge piers, low bridges and other obstructions have kept alive a spirit of improvement which has produced steamboats thoroughly adapted to present conditions, not only for safe navigation, but for the handling of freight aboard ship as well as for receiving and discharging. The balanced rudder, a clever

device for the more effective control of the boat, and the steam capstan, now in use all over the world, were first introduced on the Ohio River. The railroads have by no means surpassed the steamboat in the manner of handling merchandise freight. They have not even kept pace with the steamboat. In fact, the greater portion of this class of freight, if not all, is handled by the shipper or receiver himself, each in his own way and with the means available to him.

Two citations from reputable trade journals might be quoted in support of this statement. The *Engineering News* in its issue of January 5, 1911, stated:

"All admit that our present methods of freight handling are crude; they are no better than they were fifty years ago, while not nearly so cheap."

The *Electric World* some time since called attention to the same fact in similar language.

True, there must be suitable terminal facilities in the form of wharves, docks and transferring machinery, and these must be provided by the States or municipalities and be accessible to all railroads and river lines on equal terms.

Public water terminals have long been in use in both the inland and ocean ports of Germany, and are now fast becoming an institution in American transportation.

There is every reason to believe that as the Ohio River improvement approaches completion municipalities along its shores will bestir themselves to provide adequate and efficient public terminals.

But above all things it should be understood that Governmental action, whether Federal, State or municipal, to foster transportation by water, is not taken in hostility to the railroad, but in the interest of the commercial development of the country. The water line must be a competitor of the rail line in no different sense than one rail line is a competitor of another between the same points. There must be as much cooperation between rail and water lines as there is among the railroads themselves. Then the one method of transportation will be a complement of the other, and our commerce will have the benefit of the best there is in both.



THE "SHIPS OF THE DESERT" SCENT THE WATERS OF A DISTANT OASIS

By courtesy of Liebler & Co.

A SEA IN THE SAHARA

By HARRY CHAPIN PLUMMER

UNDoubtedly the influence of the French in North Africa would be immeasurably strengthened by the opening up of an almost limitless area of the Sahara, hitherto regarded as waste land." One of the few American newspaper writers who have sought to impartially present the political and economic causes for Italy's seizure of Tripolitania is Mr. Plummer, who here reveals the commendable rivalry that exists between France and Italy for the reclamation of the desert on the Tunisian-Tripolitan frontier.

BY an engineering project of most magnificent daring, the Sahara Desert promises to be penetrated to its very heart by the floods of the sea so that where now the camel, that traditional "ship of the desert," maintains his awkward, but faithful, march across the parched and arid wastes, real craft would sail, threading their way among verdant islands. Like a very Arabian Nights' dream must this prediction seem. Yet it has the authority of the most learned of modern scientists to give it the impress of fact. Although the proposed Inland Sahara Sea would afford a most valuable commercial waterway from the shores of the Mediterranean to the sand dunes of the interior, the primary purpose of the great undertaking is to render cultivable, by the inducement of rainfall, a vast desert area surrounding the promised water expanse.

It is the opinion of the most conservative men of science that the "flooding of the Sahara" would have the effect of mitigating the blighting, scorching "sirocco," or hot wind, that, periodically sweeping from the desert across the Mediterranean, spreads ruin and devastation among the vineyards and olive groves of Sicily. Almost directly across the sea from Sicily lies the squalid little seaport and caravan town of Gabés, in Tunisia, where the waters of the sea would make their first entrance to the Dark Continent.

European interest in and speculation antecedent the Elie Roudaire project of three decades ago, for the construction of a great artificial inland sea to flood the



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wastes of the Sahara Desert, or of that portion of the desert lying within the confines of Tunisia and to the southward of the Tunisian frontier of the southeastern wing of Algeria, has lately been revived. The object of so colossal an engineering work would be to induce, by the creation of a body of water of an average depth of seventy-eight feet, an appreciable precipitation over the northern portion of the des-

ert. The original Roudaire scheme was for a water extent of 3100 square miles. Viscount de Lesseps, the builder of the Suez Canal, regarded the plan as a feasible one, and estimated that it would cost \$30,000,000.

The latest plans for the Sahara sea, now under consideration by the French government, contemplate the flooding of a desert area of millions of square miles and extending yet farther southward than the zone of the earlier project. Out of this immense sea the higher and more mountainous sand dunes would rise as barren islands of sand. By the inducement of moisture, however, it is the theory of the advocates of the plan that certain forms of vegetation could be made to thrive, when given a dependable source of moisture and protected from the ravages of the sandstorms that, in the absence of the arresting influence of water areas, oversweep the Sahara, attaining a range and velocity of tremendous proportions.

For two hundred and fifty miles of the distance inland from the Gulf of Gabés, on the Tunisian coast, the proposed man-made desert sea would be accommodated

by great depressions, or natural basins, which become flooded in the rainy season on the coastal plains. The largest of these, the Chott-el-Djerid, has an eastern arm called the Chott-al-Fejej, which is separated from the Gulf by a sandy ridge, thirteen miles wide, while an even narrower neck of land separates Djerid on the west from the Chott Gharsa. This basin, extending from east to west, lies half in Tunisia and half in Algeria. A succession of smaller basins to the westward forms a veritable chain of waterways to the Chott-el-Melghir, to the northwest of which

as far to the southwest as Quargla, a distance, in each case, of about one hundred and seventy-five miles from Gabés. Attaining to a total area of 3100 miles, the so-called "inland sea" would take the form of an immense lagoon, describing a right angle.

Truly a wonderland is the territory which would directly benefit by the creation of the great water area—a land where modern and ancient civilizations meet on the neutral ground of Moslem inertia. At Tunis, at Biskra, at Kairouan, at Gafsa, the shriek of locomotive whistle and grind



THE LARGE ARAB TOWN OF QUARGLA, MARKING THE SOUTHERNMOST BOUNDARY OF THE SAHARA SEA, AS PLANNED

is the city of Biskra, one of the most important of French military posts in the Algerian province of Constantine, with a population of about ten thousand. Thence southward, following the Wadi River, a sluggish stream which overflows its banks during the winter rains, to the town of Quargla, a station on the trans-Saharan caravan route, the waterway would have a partially natural course for another one hundred and fifty miles.

By the removal of the sand-bar at Gabés, the waters of the Mediterranean would be admitted, by natural channels, as far to the northwest of that point as the Oasis of El Kantara, near Biskra, and

of air-brake on the well-equipped French railways of Tunisia remind the western visitor of home. At Timgad, styled the "Pompeii of Africa," at Dougga, at El Djem, ruins of ancient temple and city maintain a majestic silence and solitude under azure skies—mute evidence of the glories of the Roman domination of Carthage! For here was once Carthage, that reached the zenith of its grandeur before the dawn of Christianity. But for all that Phœnician and Roman held sway in ages past, the land today bears, inwardly and outwardly, the impress of Islam. Contemplation, on the one hand, of crumbling masterpieces of the art of the ancients,

or, on the other hand, of the restless energy of twentieth century life, will be broken in upon by the sunset call of the muezzin from the minaret of the Mohammedan mosque, calling the faithful to prayer. And guttural Arabic accents borne from caravans as they end their long journey across the desert, bespeak the illimitable vastness, the unfathomable mystery of the Sahara, and, so, seem to render the more intrepid the later scheme.

Undoubtedly the influence of the French in North Africa would be immeasurably strengthened by the opening up of

the really characteristic ambition of many of the inhabitants, to acquire small allotments of land, has been systematically fathered by the new government, thus gradually doing away with the tenant system, which had operated to prevent actual development of an agrarian industry.

With the western and abutting territory of Algeria brought well under the civilizing benefits of European domination, the task that confronts France in Tunisia is less that of a pioneering object than one of mere expansion of work already carried



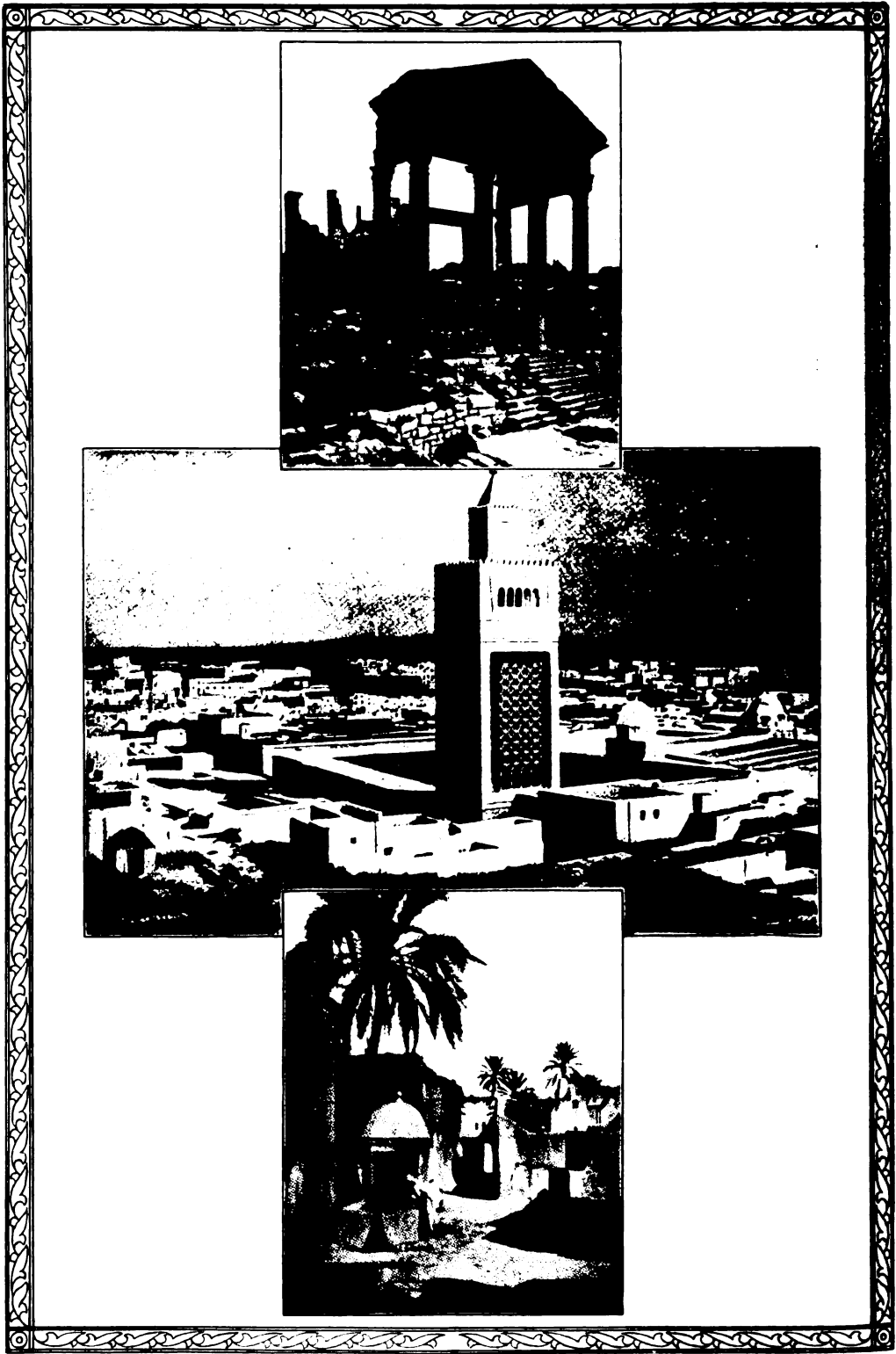
BY ROUDAIRE, FIGURES AS AN IMPORTANT POINT IN THE FRENCH SCHEME FOR A TRANS-SAHARAN RAILWAY

an almost limitless area, hitherto regarded as waste land. It is true that the native Berbers, or Kabyles, as they are locally termed, and the pastoral nomadic Arabs who people the eastern part of Tunisia, are distinguished neither for their enthusiasm nor their steadfastness as tillers of the soil. Nevertheless, what remnant of energy in this direction there has been left to those dependent peoples, after centuries of mis-government and ruthless exploitation, is now being encouraged by the French colonial administration.

Under the Tri-color, that bane of the agriculturist within Islamdom, usury, has been well nigh abolished, and

well toward fulfillment in Algeria. But that concessions have yet to be made by the conqueror to the conquered in the newer colony, is to be judged from the fact that whereas in Algeria access to the Mohammedan mosques has long been permitted to Europeans, this continues to be denied by the administration of Tunisia.

The French program in Tunisia is evidently the result of long study and careful deliberation. It is significant of the sense of security felt by the government in the occupation of the country that attention of late years has been concentrated upon so far pushing its southeastern limitation as to encroach upon the neighboring



1. FACADE OF RUINED TEMPLE ERECTED TO JUPITER AT DOUGGA.
2. TUNIS, THE METROPOLIS AND CAPITAL OF THE FRENCH POSSESSION. EQUALS INDIANAPOLIS IN POPULATION (170,000).
3. "TOWN PUMP" AT BISKRA, AN IMPORTANT RAILWAY CENTER IN THE EASTERNMOST ALGERIAN PROVINCE OF CONSTANTINE.



ARAB MARKET SCENE AT GABÉS

THE GULF PORT WHERE THE WATERS OF THE MEDITERRANEAN WOULD ENTER THE DESERT COUNTRY

westerly frontier of Tripolitania, or of that vast, little-explored division of Tripolitania known as Fezzan.

By a *coup d'état*, which has been regarded a very masterstroke of French diplomacy and which was effected some time prior to the outbreak of the Italo-Turkish war, a new delimitation of the boundary line between Tunisia and the old Ottoman vilayet of Tripoli advanced the easterly border of the French possession to embrace a strip of the territory of Fezzan three hundred kilometers (180 miles) from the sea. Of this the center of population is the important frontier-town of Ghadâmes. Indeed a strategic point of value to the French occupation is this gateway to Fezzan and the great caravan routes leading to Murzuk, a hotbed of Moslem fanaticism, to Ghat and to the wastes of the Sahara reaching yet farther into the interior of the continent.

An oasis is Ghadâmes in the stretch of desert-land classified, among the several differing types, as the Erg, or region of great sand hills. Extending westward from Ghadâmes, the Erg is traversed by

the Wadi Ighergher, the bed of a stream which finds its seaward continuity in the succession of waterways of like character and the several "chotts" which would form the Inland Sea.

So, in fixing upon Ghadâmes as the final outpost of their territory, the French have effectively flanked, upon the only side from which foreign interference might be anticipated, the zone of the projected Inland Sea. Ghadâmes will become still more important as a military stronghold when the Tunisian railway system connecting with the lines crossing the easternmost Algerian province of Constantine is extended southeastward to that point. For Ghadâmes is destined to be one terminus of that system, whereof yet another will be Gabés, the gulf port which would mark the Mediterranean entrance to the Inland Sea.

It is a fact now generally known that the economic necessity for Italy's seizure, upon behalf of the ancient Sicilian industry, of extensive sulphur deposits in the region of Tripolitania and Cyrenaica bordering upon the Gulf of the Great Sidra —

called in Arabic "Giun-el-Kebrit" (the Gulf of Sulphur)—was a determining factor in the rupture of peaceful relations between the two countries. The Turkish authorities, by traditional procrastination and elusion, had effectually prevented the Italians from gaining a foothold in the exploitation of the sulphur and phosphate.

In April of 1911, half a year preceding the commencement of hostilities, an Italian mineralogical expedition, captained by Count Michele Sforza, was sent out by the Bank of Rome, under the protection of the royal government, to definitely

played by France in the advancement of her Tunisian frontiers to include the territory about Ghadâmes, which was known to be rich in sulphur. Indeed, no sooner had the latter nation acquired from the Turks the zone abounding in mineral deposits than the noted French geologist, Pervincaire, was sent post haste to the scene from Paris, in company with the director of the mineral service of Tunisia.

The two technicians pursued with the utmost secrecy a plan of study and research of the mining possibilities of the region about Ghadâmes. It is interesting



WHERE THE SCORCHING SANDS OF THE DESERT GIVE WAY TO THE COOL, LIMPID WATERS OF THE OASIS OF TOUGGOURT — "THE

ascertain the extent and richness of the sulphur deposits of Tripolitania, which had attracted the attention of Crispi almost two decades previously. The six members of the expedition found themselves hampered from the moment of their entry into the Turkish possession. And their ultimate arrest and detention as prisoners of war were a noteworthy event in the annals of the war.

In the light of what has since transpired it becomes clear that the Italian government was impelled to take its stand, in respect to the sulphur resources of Tripolitania, not so much by Ottoman inertia as by the unwonted activity dis-

to note that when they had completed their work at that point, they proceeded to the vicinity of Gabés. There they investigated and confirmed the existence of a stratum of sulphur extending outward from the shore to the nearby island of Gerba, or Gerja, where the mineral was encountered in exceeding richness of quality and in abundant quantity, at a depth of but fifty-eight feet from the surface.

Never before has the problem of reclamation of the Sahara wastes so actively engaged the attention of science as in the present day of conquest of the Mediterranean seaboard of North Africa. The

resources of twentieth century ingenuity are being exhausted in the study of the problem—in Southern Algeria and Tunisia by the French, and in Tripolitania, or the "Libia Italiana," as they would term it, by the Italians.

One of the first of Italy's scientists, Professor Paolo Vinassa de Regny, of the Royal University of Parma, has made the possibility of restoring the splendid irrigation maintained under the Roman domination of ancient Cyrene the subject of a searching investigation. His conclusions, as published in the *Rivista d'Italia*,

the east and on the north. In the Edeien are the impalpable sands into which the wayfarer sinks, while the drift fills his eyes, his ears, his mouth, his nostrils. It finds its way into the food and the water—wherever quartzose sands may penetrate—and, borne by the wind, it injures the eyes and draws the blood from the exposed skin. But in the very midst of the sands of the Edeien are the verdant spots called oases."

The scholar lays stress upon the productive capacity of the desert sands along the Tripolitan coast, which present a



WATERS OF THE SKY ARE DEAD, BUT THOSE OF THE SUN (THE UNDERGROUND STREAMS) LIVETH," IS AN ANCIENT ARAB PROVERB

detail the hydraulic resources of Fezzan and take into special consideration the desert-land of the Erg. His remarks, quoted as follows, indicate the exact nature of the formidable obstacles which, like Italy in Tripolitania, France is seeking to overcome in Tunisia, and against which the Inland Sea would be expected to effectively operate:

"The type of desert most familiar to the popular mind, but, in fact, not the most common, is the Edeien, or sandy desert, of which the Erg, on the Tunisian frontier of Tripolitania, is an example. It adjoins Ghadâmes on the west as it adjoins the Hammada (rocky desert) on

remarkable likeness to the Tunisian Erg:

"'Desolate African sands' is a time-honored phrase. * * * A great part of the Tripolitan coast, as we have seen, is truly all sand. Our opponents are right; in the noun, not in the adjective. Sand, in fact, is all the soil of the oases and of the 'desert' that surrounds the oases—sand and a little clay. But sand is full of fertilizing elements, possesses many advantageous properties, and in its mineralogical make-up is complete in all those chemical elements which are indispensable to the development of plant life. It would be difficult to imagine an African soil more fertile than this sand."



"FIRST IN PEACE!"—WASHINGTON LANDING AT NEW YORK FOR HIS INAUGURATION

INAUGURATING OUR PRESIDENTS

By EDGAR C. SNYDER

MORE women will be in evidence at the Wilson inauguration than at any since the girls of Trenton, whence Governor Wilson comes to Washington, in a flower-laden procession greeted the first President on his way to New York." It is an imposing array of the elect of the Republic that Mr. Snyder marshals in his review of twenty-seven inaugural ceremonies—from "The Father of His Country" to the "Scholar of Princeton," who is to be seated in office this month.

WHEN the founders of this Republic provided for the highest office within the gift of the people, they ordained in the Constitution in Article II, Section 1, Paragraph 7: "Before he shall enter on the execution of his office, he shall take the following oath or affirmation: 'I do solemnly swear (or affirm) that I will faithfully execute the office of President of the United States, and will, to the best of my ability, preserve, protect and defend the Constitution of the United States.'"

That was what was at first termed the "inauguration." It was designed by the fathers to be as simple as it was solemn, as solemn as it was simple. But, although divested in no wise of the impressiveness of sacred consecration to mighty powers and exalted responsibilities, the initiative of the first inauguration was made an occasion of unrestrained popular jubilation. The christening of the Government under the Constitution, celebrating anew the birth of the Republic, when blossoms of new life made brilliant the bosom of the springtide, filled Americans of the first generation with an overbrimming joy.

All the way from near Virginia's heart to the site of the great metropolis of the New World there was unfeigned enthusiasm for the world's greatest champion of liberty. There was no moment's cessation to these demonstrations anywhere along the route until the taking of the oath prescribed by the Constitution.

General Washington, having borrowed \$3,000 wherewith properly to equip himself for the extraordinary emergency in



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which he was required to exhibit himself, kissed his mother goodbye, and on April 16, 1789, set out on his way to New York, for his inauguration. A great crowd of Virginians, women and children bade him Godspeed, with the parting optimistic injunction from the mayor of Alexandria, "go and make a grateful people happy."

On the northern bank of the Potomac all the citizens of Georgetown greeted him.

Many of them accompanied him all the way to Baltimore, and from there many Marylanders went with him far along the way toward Wilmington, Delaware. The next pause was at Chester, Pennsylvania, for an elaborate breakfast. Then at Philadelphia a multitude welcomed him with every sign of delight. There Angelica Peale, a daughter of one of the famous painters of the Revolution, crowned him with a wreath of laurel, the climax of that day's feting being a banquet at the City Tavern. The historic "City Troop" of Philadelphia was his cavalry escort to Trenton, New Jersey, where they found long lines of young girls on either side of the highway, which they had strewn with flowers. That night he spent at Trenton with the famous Presbyterian minister, Rev. Dr. John Witherspoon.

Crossing the waters between the Jersey shore and New York, he was borne on a barge manned by the masters of thirteen vessels. Then with him were a joint Congressional reception committee and, as the chroniclers of the time have it, "a committee of effervescent spirited gentlemen of New York." The weather was fine.



WOODROW WILSON, WHO IS TO BE INAUGURATED THE TWENTY-EIGHTH PRESIDENT OF THE UNITED STATES



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THOMAS R. MARSHALL
ELECTED VICE-PRESIDENT OF THE UNITED STATES

General Washington wore a suit of solid buff, coat, waistcoat and breeches, all buff; with a light sword at his side. Just two weeks after he had left his mother in the little Virginia town, at 9 o'clock on the morning of April 30, began the march to the place of inauguration at the City Hall. Cannon boomed and church bells rang as twelve military organizations wheeled into line behind the President-elect, seated in a coach drawn by four horses.

The oath of the Constitution was administered by Chancellor Livingston, and as its words were uttered and the concluding sentence, "So help me, God," fell from the lips of the "Cincinnatus of the West," the Chancellor raised his hand and cried, "God save George Washington, President of the United States."

The multitude took up the cry with joyous acclamations and showered their congratulations upon the first President of the United States, as he stood smiling among them attired in an elegant brown velvet suit, a fine new sword at his side and silver buckles shining at his knees and on his shoes.

Such were some of the features of the first inauguration. The second inauguration of Washington was by appointment of the Congress, to be permanently on that date, March 4, 1793, at Independence Hall, in Philadelphia. On this occasion the President wore a black velvet suit, ornamented with diamond knee buckles, black silk stockings, elaborately powdered hair; light sword in a green scabbard. A central figure was the first Secretary of State, then called the Secretary of Foreign Affairs, auburn-haired Thomas Jefferson, in a blue coat and red breeches.

The inauguration of the second President, John Adams, was the last in Philadelphia, and took place in the Hall of the House of Representatives. There was much impressive ceremony, but far less ostentation than on former occasions.

Thomas Jefferson's inauguration, traditionally accounted the simplest of all, was the first in Washington. There are conflicting stories concerning whether Jefferson rode horseback to the scene and hitched his own horse, but there is no doubt that it was a very simple and gravely business-like affair. The retiring President was not there, sickness in the

family being the excuse offered. Jefferson's second inauguration, even more simple than the first, was in the Senate chamber, and the oath, as in his first inauguration, was administered by Chief Justice John Marshall.

The fourth President and the third Virginian to head the young nation, James Madison, dressed in a suit of American-made woolen, was inaugurated with somewhat more display by the people than was his predecessor. There was marching, and artillery thundered for a time. Then in the evening was held the first inaugural ball. Madison's second inauguration was a repetition of the first.

When James Monroe, the fifth President, was inaugurated in 1817, there was a larger military display than at any since Washington's first in New York, and at night there was a public reception and a ball at the Davis Hotel, now the Metropolitan, on Pennsylvania Avenue.

Another simple and severely formal inauguration was that of John Quincy Adams, which took place at the Capitol in the Hall of the House of Representatives, now Statuary Hall, in which Mr. Adams was fatally stricken with illness while he was a member of the House.

The inauguration of Andrew Jackson, another military hero, was long memorable for the great multitude of people, and the numerous troops of soldiers, and bands of Revolutionary veterans. Jackson was the first President to be inaugurated at the east portico of the Capitol. In the meanwhile, former President Adams was somewhere else, taking a horseback ride.

Martin Van Buren's inauguration had for notable features a ride from the White House to the Capitol with Jackson in a phaeton made out of wood from the old Revolutionary frigate *Constitution*, and two inaugural balls.

A third soldier-President in William Henry Harrison showed another martial-featured inauguration, with dancing and refreshments in the evening at three inaugural balls. He was the first President to die in office, and his successor quietly took the oath April 6.

James K. Polk, inaugurated March 4, 1845, had a popular demonstration of welcome to office, but with the disadvantage of such extremely disagreeable



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THE COMING "FIRST LADY OF THE LAND," MRS. WOODROW WILSON, AND HER THREE DAUGHTERS
Standing, from left to right, Miss Jessie Wilson, Miss Margaret Wilson, Mrs. Wilson; seated, Miss Eleanor Wilson



MRS. THOMAS R. MARSHALL
WIFE OF THE VICE-PRESIDENT-ELECT

weather that it caused the first agitation known for a change of inauguration date.

Zachary Taylor, the fourth war hero, naturally had very much of a military inauguration, with many present who had served with him in Mexico. This inauguration had three balls, one in a temporary structure in Judiciary Square, one at Jackson's Hall and another in "Carnie's saloon;" all attended by the President and Vice-President.

Millard Fillmore, upon President Taylor's death, took the oath of office in the Hall of the House, before both houses.

Gen. Franklin Pierce was inaugurated in bad weather, but nevertheless at the east portico. Vice-President William R. King was in Cuba on account of failing health, and took the oath of office at a consulate in Matanzas. There was no inaugural ball in Washington that year.

The inauguration of James Buchanan was a brilliant occasion in propitious weather. There were several balls and receptions, and besides Buchanan and Pierce in attendance was George W. P. Custis, grandson of Mrs. George Washington.

The inauguration of Abraham Lincoln was portentous of tragic years to come upon the country. There was a large and imposing military demonstration, but it looked more like the preparation for battle than a peaceful pageant, for sharpshooters were posted on the roofs of houses along Pennsylvania Avenue for the protection of the President. Gen. Winfield Scott was in command. The sense of approaching strife was everywhere apparent, and it was sought to be relieved by Mr. Lincoln in the noble sentiment concluding his address when he said:

"The mystic chords of memory, stretching from every battlefield and patriot grave to every heart and hearthstone all over this broad land, will yet swell the chorus of the Union, when again touched, as surely they will be, by the better angels of our nature."

Upon Mr. Lincoln's death Andrew Johnson took the oath of office at Kirkwood's hotel on Pennsylvania Avenue, now known as the Raleigh hotel.

The inauguration of Ulysses S. Grant, the Union's greatest soldier, falling upon March 4, 1869, was in extremely gloomy weather, but saw the greatest military parade that had yet marched in Washington on an Inauguration Day.

Grant's second inauguration was in a raging storm, and the celebration of it was mainly confined to a big inaugural ball in a temporary building in Judiciary Square.

March 4, 1877, fell on Sunday, so that President Rutherford B. Hayes, after having taken the oath on Saturday night, March 3, was inaugurated on Monday following. There was an imposing military exhibition, torchlight processions at night, but no inaugural ball.

James A. Garfield's inauguration encountered a severely wintry day of sleet and snow. An inaugural ball was held in the National Museum building of the Smithsonian Institution.

Vice-President Chester A. Arthur, when President Garfield died, took the oath at his Lexington Avenue home, in New York City, at two o'clock on the morning of September 20, 1881.

The inauguration in 1885 of Grover Cleveland, the first Democratic President since Buchanan, attracted an enormous crowd of visitors to Washington, the largest the city had ever seen, with the

biggest militia contribution ever sent from the States. Among the marshals of the march was the Confederate veteran cavalry general, Fitzhugh Lee. At night was held the first inaugural ball using the Pension Office, and it was estimated it was attended by 8,000 people.

Mid lowering clouds and the constant patter of the rainfall, Benjamin Harrison, the twenty-fifth President of the United States, was inducted into the loftiest office within the gift of the people. March 4, 1889. And what a sorry-looking inauguration crowd it was! Never before had there been such preparations made for a gala occasion. But the storm which broke over the Capital on the day preceding seemed to take a fiendish delight in spending its force on the multitude that was in waiting to view the pageant as it swept majestically along historic Pennsylvania Avenue.

President Cleveland's second inauguration was much like the first, in all essential features, with a huge civic and military parade and an inaugural ball in the Pension Office building, but under trying weather conditions, which led to a renewal of the agitation for a change of date for the ceremony.

When William McKinley was inducted into office in 1897, after an election by a tremendous majority, to which many thousands of his former political opponents contributed, the occasion was marked by a great popular demonstration in his honor. His second election, with another general national endorsement, was followed by an inauguration in which the military feature was unusually interesting on account of the participation of soldiers who had served in the war with Spain in Cuba and the Philippines. The all-embracing patriotism of President McKinley brought the country's long-estranged parts into closer bonds of respect and mutual affection, while his untimely death caused nation-wide grief, for no President had been more generally beloved.

Vice-President Theodore Roosevelt took the oath of office at Buffalo, where he had been summoned from the interior of New York.

Elected to succeed himself in 1904, President Roosevelt's inauguration was quite in keeping with the character of

the man. He had been one of the warriors on San Juan Hill, and troopers and cowboys who had served with him in his regiment of Rough Riders were in the parade.

President Taft's inauguration was one of the most popular of such events, marked by a fine military and civic display, including native Filipino soldiers and headed by a splendid Filipino band. The night closed the event with a great ball in the Pension Office and a marvellous display of fireworks and street illumination.

Now comes the inauguration of Woodrow Wilson, of New Jersey, the twenty-eighth and the eighth Virginia-born President of the United States. It will signalize the return to power, after sixteen years, of the Democratic party, following an election in which the native Southerner received more electoral votes from the northern than from the southern States.

President-elect Wilson having frankly signified that he wished the inauguration to be as simple as possible, the local managers have sought to comply with his wish. Conformably to his desire, the inaugural ball feature will be omitted. There will be the usual marching of organizations, civic and military, and fireworks. President Wilson, after the ceremonies, the oath, the address at the east portico and the review of the parade, will go at once to the White House, with his family, in whom the whole social mind of the Nation is unusually interested because in the Executive Mansion will dwell the worthy wife of a forceful man and ripe scholar, and three grown daughters, each possessed of exceptional charms of character and intellect.

Indeed the women of the country have evinced an unprecedented interest in the accession of the Wilsons. Women will, in organized marching ranks, represent the advocates of more liberal laws for their sex, having planned for the greatest and most impressive demonstration of the kind ever seen in America. In fact more women will be in evidence at the Wilson inauguration than at any since the girls at Trenton, whence Governor Wilson comes to Washington, in a flower-laden procession greeted the first President on his way to New York.



1 ROCKS BRIDGE AND THE MERRIMAC, HAVERHILL 2 LAWRENCE DAM, LAWRENCE
4 WHITTIER BIRTHPLACE, HAVERHILL

3 CHAIN BRIDGE, NEWBURYPORT

THE RIVER OF SPINDLES

By LESLIE K. MORSE

"WHAT an oversight there has been in the past in not developing this magnificent stream—a stream as beautiful as the Hudson—upon the banks of which so many thriving industries are located. The Merrimac turns more spindles than any other river in the world." The historic valley that pierces New England's "hive of industry" is described by Mr. Morse, whose position as the Mayor of Haverhill, the "slipper city," eminently qualifies him to discuss the crying need—a deep channel to the sea.

CLOSELY identified with the glorious history of Massachusetts are the deeds and achievements of the communities peopling the Merrimac Valley, but the most brilliant chapter must chronicle the modern industrial development of the numerous cities watered by that famous stream. From its source in the White Mountains, the lovely Merrimac courses through the verdant hills of the Granite State, to pass such stately cities as Concord, the capital of New Hampshire, and Manchester and Nashua. Flowing thence across the Massachusetts boundary, the Merrimac reaches Lowell, the birthplace of Whittier and the "Queen City of the Valley," physically fit to bear the burden of commerce which that teeming center of industry, whereof Whittier so eloquently sang, has built up for posterity. But for an ensuing distance of twelve miles, the river is a negligible factor as a waterway, and at Haverhill, where it first becomes navigable, craft of no more than two hundred tons burden can be accommodated, with but four and one-half feet of water available at low tide.

That Haverhill, the greatest slipper-manufacturing center in the world and destined soon to lead in the production of shoes and gloves, and Lawrence and Lowell, of woolen and cotton-mill fame, and a host of adjacent industrial cities, may be provided cheap and easy access to the untracked highways of the sea, representative citizens of the several communities have banded in the Merrimac Valley Waterways Association, a



voluntary organization, endorsed by the city councils, boards of trade and civic bodies of the valley, from Lowell to Newburyport.

A waterway board appointed by Governor Foss of Massachusetts to compile data on the river, with a view to recommending its development, has already found that in order to make the great New England cities grow, her wonderful waterway, alongside of which the Indians trod, must be made navigable. A Federal Government engineer is expected shortly to make a report, following hearings and study, on the advisability of deepening the river from the mouth to Lowell, a distance of about 35 miles.

I may say that the Merrimac Valley Waterways Association evolved itself from the profound impression made upon me and upon several of my associates by the exchange of views and organization of activity witnessed at the National Rivers and Harbors Congress of a year ago. Knowing what we have in New England, I was very much surprised, and wondered why some one had not before looked out for old New England, the center of manufacturing industries of the world.

It has been estimated that this undertaking which we of the Merrimac Valley so much desire to see accomplished would cost \$8,000,000, from Newburyport Harbor to Lowell. If the Federal Government should decide to issue bonds for this improvement, it would cost only \$320,000 per annum, which amount doubtless can be saved on coal alone. Then we would be in touch with the whole world, as well

in receiving, as in delivering our products. We now have the largest shoe factories and woolen mills in the world.

Of the total value of manufactures produced by the State of Massachusetts in 1911, amounting to \$1,465,740,310, the industries of the Merrimac Valley contributed \$214,388,941, or about fourteen per cent.

Only thirty miles from the ocean to Lowell; with only four and one-half feet at the present time at the wharf, at low tide, in Haverhill, fifteen miles from the ocean. What we want, and need, is a twenty-foot channel. We then can have

agriculture than any other county in New England, according to her size. If we had water rates, we could find a daily market in New York and Boston.

New England, and especially Massachusetts, has received but a small share of the total appropriations made by the Government for the improvement of waterways. For example, Massachusetts, with a wealth and population twice as great as those of Texas, received in 1910, \$745,000, while Texas received \$3,542,000, or five times as much. In the last appropriation of 1912, Massachusetts received \$431,000, and the State made an appro-



A MILE OF MILLS ALONG THE MERRIMAC'S BANKS AT LOWELL.
COAL AND COTTON SHOULD REACH THESE BY WATER

our coal, lumber, cement, lime, cotton, and wool, shipped by the coast-wise boats to our wharves, where, to-day, we are dependent upon only one railroad. A man in my city handles English grain, and it costs him more for freight from Boston to Haverhill than it costs from Liverpool to Boston.

Let me try to prove why we think we are justified in calling upon the United States for the completion of this waterway. The population of Essex County is 535,499, and by including Manchester, Nashua and Concord, we add 117,575 more, besides twenty-five or thirty towns close to our border line. There are 7,939 manufacturing establishments in Massachusetts. There are 1,616 in the Merrimac Valley, about 22 per cent. of the whole State. Essex County produces more in

appropriation of \$9,000,000 for the development of the Port of Boston, while Texas this year received from the Government \$1,680,000.

There will be a bill drafted in the near future, asking Congress to take action upon this improvement, which will relieve the congestion and stagnation of progress on one of the most worthy streams of the Atlantic Coast. If the Federal Government can give twelve million dollars to one city, and a promise of twenty-five millions more, within a limited number of years, it does seem as though New England should commence to have hers.

Being in the real estate business, I have had opportunities to sell large tracts of land along the Merrimac to important industries, if we could show them that their raw materials could come by the

coast-wise boats. Haverhill has nine miles of frontage on the north side of the Merrimac; two miles is taken up by its factories and retail establishments, leaving seven miles suitable and available for any and all kinds of industries, with four miles on the south side of the river. The working people of the city of Haverhill own more equity in their homes than do those of any other city in this country.

In Haverhill there are 325 manufacturing establishments; Lawrence has 129, mostly large mills, and Lowell 234, the last named city being a mill municipality which is now attracting many diversified industries. Add to all of these the industries of Manchester, Nashua and Concord, and it is proven that no river has so many factories on its banks.

If New England is to maintain her supremacy as an industrial center, which she is able to-day to hold by reason of her unlimited supply of labor, capital and intellect, the avenues for reaching the crude or raw materials in addition to the railroad must find a way to the manufacturing community, and the development of the canals and rivers is the key to the situation.

The first improvement upon the Merrimac was at Newburyport Harbor in 1828. The next came in 1870, forty-two years later. From 1870 to 1874, and to January, 1896, there were appropriations amounting to \$254,466.72, and in March, 1899, one calling for a seven-foot channel at mean low water to Haverhill, at a cost of \$171,442.70. This was completed in 1907. So, at the present time, at low-water mark, we have 1.7 feet at the mouth of the river, and 4.6 at the wharves at Haverhill.

We come now to one of the greatest problems of the day, the shipping facilities which we have. First we will take coal. It costs fifty-five cents per ton to lighter coal from Newburyport to the Haverhill wharves, and to that twenty cents must be added for breaking and handling, making in all seventy-five cents per ton.

Haverhill used ninety per cent. of her water-rate coal in 1911, amounting to 70,705 tons, which would be a difference to the poor of \$56,564. Seven miles farther up the river is the city of Lawrence, tied to her one railroad, the rates of which are much higher than the water rates. She

might have saved on her consumption \$113,128. Lowell, six miles farther upstream, with her prevailing rate of consumption might have saved \$169,692. The total of the saving in these three cities in 1911 would have been \$339,384, which is more than interest on \$8,000,000 of bonds. One firm in our city could save \$50 a day through the year if it might have the coast-wise boats land at its dock.

In 1903 there was a boat line in operation between Boston and Haverhill, and when it was withdrawn, more freight was left in the shed at Boston than the steamer could have carried upon one trip. Excursion steamers formerly plied up and down the river, conveying people to the beaches at the mouth, but the river has filled up with mud in places and these lines have been abandoned.

Let us see what the manufacturing products of the Valley can show: In 1911 Newburyport manufactured \$7,202,724; Amesbury, \$5,187,087; Merrimac, \$919,020; Haverhill, the largest slipper city in the world, and destined to be the largest shoe and glove manufacturing center, \$35,650,830; Lawrence, the next largest shipping point in New England to Boston, \$69,574,701; Andover, \$3,687,663; Methuen, \$3,580,630; Lowell, \$56,612,154; Billerica, \$2,762,603; North Andover, \$2,205,992; Chelmsford, \$3,008,084; Clinton, \$7,781,713; Georgetown, \$369,805; Marblehead, \$1,371,603; Peabody, \$14,193,731; Rowley, \$400,701; a total of \$214,388,941. The amount produced in the entire State was \$1,465,749,310.

By eliminating metropolitan Boston, this would give the Merrimac Valley practically one-sixth of the whole amount produced in the State. The assessed valuation of Essex County through which this river flows, with the upper part of Middlesex, also a part of the Valley, in 1911, was \$383,708,540.

Nature has given us one of the most beautiful streams that flows into the Atlantic and has left nothing undone to make the Merrimac Valley as beautiful as the Hudson. But what I have sought to show is what an oversight there has been in the past, in not developing this magnificent stream, upon the banks of which so many thriving industries are located. The Merrimac turns more spindles than any other river in the world.



THE TRUE "SUNSET LAND"

I kept in mind a certain wonderful sunset which I witnessed when steamboating was new to me. A broad expanse of the river was turned to blood; in the middle distance the red hue broadened into gold, through which a solitary log came floating, black and conspicuous; in one place a long slanting mark lay sparkling upon the water; in another the surface was broken by broiling, tumbling rocks that were as many tinted as an opal; where the ruddy flush was faintest, was a smooth spot that was covered with graceful circles and radiating lines, ever so delicately traced; the shore on our left was densely wooded, and the sombre shadow that fell from this forest was broken in one place by a long ruffled trail that shone like silver; and high above the forest wall a clean-stemmed dead tree waved a single leafy bough, that glowed like a flame in the unobstructed splendor that was flowing from the sun. There were graceful curves, reflected images, woody heights, soft distances; and over the whole scene, far and near, the dissolving lights drifted steadily, enriching it every passing moment with new marvels of coloring.—MARK TWAIN.



THE UPPER MISSISSIPPI RIVER

By THOMAS M. WILKINSON

UPON an economic basis, the Upper Mississippi River is an indispensable requisite, as a complementary system of transportation. * * * * * It is a most valuable asset, if used commercially to an extent commensurate with its capacity." As president of the Upper Mississippi Valley Association, and a director of the National Rivers and Harbors Congress, Mr. Wilkinson has headed the campaign for inland waterways in the Central West and in the working out of the vitally related problem of terminals.

NEXT to the Revolution and Civil War, the Louisiana Purchase is the greatest fact in American history. Through the Louisiana Purchase the United States came into possession of the most fertile, resourceful, and prolific valley on the earth, and obtained control of the Mississippi River, which flows from its source in the far north southward through the longitudinal center of the valley, to its mouth in the Gulf of Mexico, a distance of nearly twenty-six hundred miles.



One of the greatest rivers in the world is the Mississippi, and Napoleon wisely prophesied that the nation which controlled the Mississippi River would be the greatest power on earth.

The Upper Mississippi Valley is an empire of unlimited resources, to which the trend of immigration has been directed for more than a century, growing in numbers each year. Still there is room for more; even six times its present population could live in luxury and comfort on its fertile lands. The sixteen million people now dwelling within the five States bordering upon the Upper Mississippi River, Minnesota, Wisconsin, Illinois, Iowa and Missouri, could be increased to one hundred million, without crowding the population per square mile, now averaging 51, to the density of many of the countries of Europe.

At the Falls of St. Anthony is built the metropolitan city of Minneapolis and just below, its twin city, St. Paul, the capital of the State of Minnesota, "the land of sky-tinted waters," among whose

innumerable crystal lakes is found the source of the Mississippi River, "The Father of Running Waters." Minnesota is one of the richest States of our Union. It annually produces more iron than any other equal area in the whole world.

The twin cities, Minneapolis and St. Paul, with a population of six hundred thousand, are at the head of what is known as the Upper Mississippi River navigation, al-

though the river is navigable for light craft for about two hundred miles above these cities, with its source still four hundred miles to the northward.

The daily output of the flour mills of Minneapolis is large enough to fill the bread baskets of one-fourth of our entire population. St. Paul is the railroad center and gateway through which pass every day thousands flocking to the great northwest country.

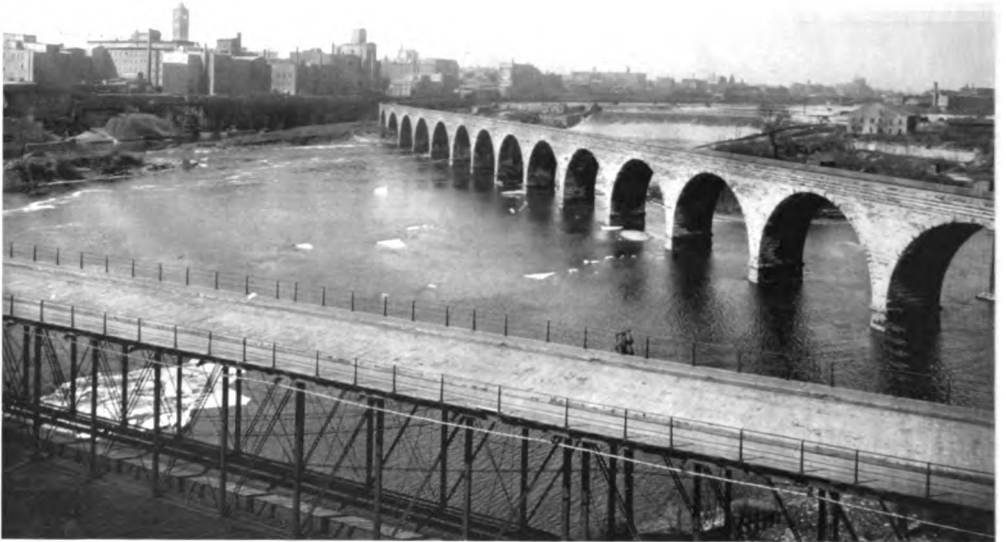
The fertility of the soil is wonderful. Besides all of the other productions of the nearly one hundred and fourteen million acres of improved farms in the five States just mentioned, the production of cereals alone on fifty-seven million of the one hundred and fourteen million acres, amounted in 1909 to nearly one billion dollars, or nearly one-fifth of the total production of cereals in the whole United States for that year. The manufactured products in these five States in 1909 amounted to three and three-quarter billion dollars, or more than one-sixth of the total manufactured products of the whole country, and of the total amount of manufactured products of the five States one-

fifth was produced in the cities and towns situated on the Upper Mississippi River between Minneapolis and St. Louis, inclusive.

The enormous production of the soil, the products of the mine and the factory, and the commercial activities of the people, aggregate a tonnage seeking transportation which taxes the present transportation systems to the limit of their carrying capacity. As these States grow

tion. Present methods are archaic and uninviting to shippers. An entirely new system must be inaugurated, or else the business will keep on going, as it does now, by the steel rails paralleling the river on both sides for its entire length. There is plenty of tonnage in sight for an immense traffic.

To harness the flow of the mighty Mississippi and to overcome the navigation difficulties of a notoriously shallow stretch



THE MISSISSIPPI AT MINNEAPOLIS, SHOWING MILLING DISTRICT AND ST. ANTHONY'S FALLS

© DETROIT PUB. CO.

older and their population increases production will be increased along every line. The commerce of the country is growing rapidly, increasing 100 per cent. every ten years. The question of transportation is a serious one. It is a matter in which everybody is interested. It affects everything bought and sold.

Upon an economic basis the Upper Mississippi River is an indispensable requisite as a complementary system of transportation. It belongs to the people and is one of their most valuable assets, if used commercially to an extent commensurate with its capacity. The people must provide facilities for its full utiliza-

of the river, the "Cooper dam," a project approaching in magnitude the Panama Canal, is now in course of construction at the foot of the Des Moines rapids in the Mississippi, between Hamilton, Illinois, and Keokuk, Iowa. The undertaking contemplates the creation of a permanent deep pool of slack water for sixty-five miles up stream, by which a nation-built canal, that has cost more than \$40,000 a year to operate and maintain, will be completely swallowed up. The new dam, which will have a lock with a lift of forty feet and of the same width as the great locks at Panama, will attain to almost a mile in length. A power-house, about one-

third of a mile long, and a huge dry-dock will be among the chief appurtenances of the new dam, which takes the form of a great mass of concrete anchored deep in the solid limestone bed of the river. The completion of this work and the opening of the new lock to navigation early in the year 1913, will mark an epoch in the history of the Upper Mississippi Valley.

In its economic significance, the new water-power development must equal in magnitude and importance its grandeur as an example of engineering construction. Offering for perpetual use two hundred thousand horse power at a price below that charged at Niagara and at still less a price than that produced by the cheapest coal in the world, it creates, in the heart of the great Mississippi Valley, a new manufacturing and industrial center capable of supporting a million people in the peaceful walks of industry.

The cities and towns located on the Upper Mississippi River possess unbounded opportunities for the development of manufacturing industries. Their location on a main waterway connecting with the sea is a permanent advantage presenting most desirable economic conditions for assembling raw materials for manufacture and the distribution of manufactured products to the world markets.

The big Cooper dam promises to become an enduring monument to the engineering achievement, integrity and skill of its distinguished designer and chief engineer, Hugh L. Cooper, a native son of the Upper Mississippi Valley, to whose personal efforts and genius is due the success of this mammoth undertaking. The entire work is under close supervision of the Chief of Engineers of the War Department. The benefits to navigation will be very great, and the savings to the American nation will represent many millions of dollars.

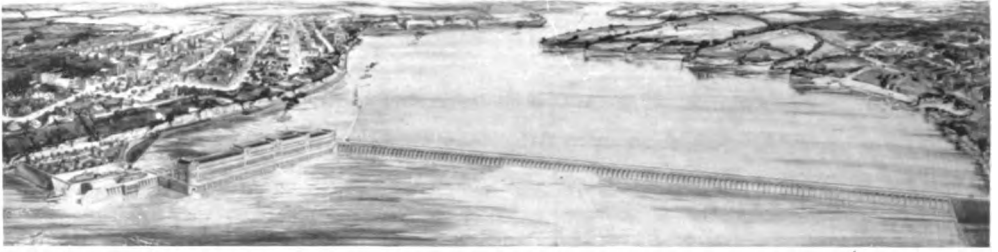
The Panama Canal, when completed, will provide for every port on the Mississippi River an open door to the trade of South America and the Orient, which, in competition with Europe, can be secured only through the utilization of water carriage by manufacturing and commercial industries, as is done in Germany and in other continental states, where transportation costs have been reduced to the minimum by this means.



THE MISSISSIPPI RIVER BOULEVARD NEAR ST. PAUL

The commercial use of the Mississippi River has declined, owing to various causes. Among these have been the difficulty of navigating it, lack of port terminal facilities and modern transportation equipment, but a chief deterrent has been the attitude of the railroads towards it. However, an awakening of public sentiment has come about. The people are beginning to realize its value and the necessity for its use. Through the influence of the National Rivers and Harbors Congress, and auxiliary waterway associations, the National Government has adopted a liberal policy whereby our inland waterways are being more efficiently improved. The river promises soon to invite the construction of modern steel-built passenger and freight boats and barges.

During early days and up to the coming of the railroads the Upper Mississippi offered to pioneer settlers the only means of communication with the outside world, and the only route of transportation. Its commerce and influence built populous and prosperous towns and cities along its banks, which attracted growing railroad systems and induced them to build their lines to the river. In time they paralleled



THE COOPER DAM, TO PROVIDE THE WORLD'S GREATEST WATER-POWER, BEING BUILT ON THE MISSISSIPPI AT KEOKUK, IOWA

the river with their rails and extended their lines everywhere, even across the continent. The railroads furnished quick and easy means of communication and transportation, and have been the most potential human agency in the wonderful development of this new country.

The growth and physical development of the whole railroad system has been marvelous. Notwithstanding its perfection, it seems to have reached the limit of its carrying capacity, and a point where it is found to be a physical impossibility to provide facilities fast enough to handle the increasing commerce following the active development of the country and its rapidly growing population.

In the meantime the railroads have, through unrestrained methods and competition, diverted its commerce and absorbed the traffic of the river, until they have secured a monopoly of transportation in the valley, as, in fact, throughout the country.

The only commodities not driven off the river while they lasted, were logs and lumber. The primeval forests of pine in Minnesota and Wisconsin, which have been denuded under the woodman's axe during the last half century, made many millionaires in the Upper Mississippi Valley, largely because of the cheap cost of transporting the logs and lumber to the mills and markets on the river. The cost of shipping these commodities by the river was infinitesimal when compared to rail rates; therefore it meant a large profit to the owners when the products were placed on the market.

New industries have taken the place of the saw mills and the monthly pay rolls are larger, with better employment of labor than before.

It is a grand old river. It flows through the heart of the Nation, the richest valley on the earth, a valley settled by the best blood of all nations, through whose comingling and the blending of the best qualities of all, has developed a new type of people, the American race, and upon this rests the future of the American Republic.

De Tocqueville said: "In all the earth there is no spot given by Providence to the children of men so beautiful, so fair and so fertile, as the valley of the great Mississippi River, from north to south."

The Upper Mississippi invites the traveller seeking pleasure and repose. From the Falls of Saint Anthony, southward, is enjoyed one of the most fascinating scenic trips in all the world of river travel. There is no place where nature has been so lavish in its creation of beautiful hills, valleys, islands, and shore lines, as on the Upper Mississippi. They form an ever-changing panorama of beauty, filling the fortunate beholder with rapture and amazement.

There is a charm in its picturesque views scarcely to be found elsewhere in the world. Its possibilities, artistically, politically, and commercially seem boundless and inexhaustible.

The river, in its nature, is a creature of moods. No two places in its course are similar. It changes with every turn of its channel, with every season of the year, with every hour of the day, and almost with every cloud that passes.

The mighty Mississippi! What it has been for centuries past, it will be for centuries to come. It will keep on its slow and silent way to the sea, always the great dynamic, dramatic, realistic force it is to-day.

THE ECONOMY OF THE PARCEL POST

By DAVID J. LEWIS, M. C.

*"THE whole subject is now 'up to' the Postmaster-General * * * * as the institution to which Congress has given the power to construct a satisfactory transportation system for producers and consumers. * * * But, oh! what an opportunity for constructive work, to be done in the broadest conception of public progress." The Representative in Congress from the Sixth Maryland District guided the shaping of the new service, from the present experimental stage of which an adequate system eventually must be evolved.*

IF you want to know how it seems to be a Parcel Post package, ask the baby son of Mr. and Mrs. Jesse Beagle, of Glen Este, Ohio. Plump, laughing, pink-and-white little Louis, who weighs ten and three-quarter pounds, just a fraction within the weight limit for the new service, was the first human mite to become a "package," and to be received, insured, carried by Uncle Sam and duly delivered to the addressee. Mr. and Mrs. Beagle consigned their "By Bye" to his grandmother, Mrs. Louis Beagle, who dwells a few miles up the road from them, and on the Batavia, Ohio, Rural Delivery Route No. 5.



Harris & Ewing

Little Louis hugely enjoyed the trip in the mail buggy with Rural Carrier Vernon O. Lytle and signified his enjoyment by kicking his fat legs and waving his pudgy fists and laughing and cooing. But if he was just a wee bit cross after his "arrival at destination," perhaps it was because his baby dignity was outraged by the fact that only fifteen cents in postage sufficed to cover his novel transportation and that the "insurance" form appraised his value at fifty dollars!

Of the 4,000,000 packages that were sent out from fifty of the largest cities of the United States in the week following the inauguration of the Parcel Post service by Postmaster General Hitchcock at the very dawn of the year 1913, perhaps the most extraordinary was one containing the ashes of Frederick Naumann, who died at Edwardsville, Illinois, and whose remains were shipped to St. Louis, for cremation. The ashes were returned to

his family by Parcel Post.

Now that the practical joker has had his fling at the Parcel Post—for the new service was of just the sort to appeal to the "Fool Killer"—the wonderfully practical advantages of the system are daily being demonstrated.

You ask me what practical economy the housewife, under the present Parcel Post rates, can realize by ordering direct from the producer. Several kinds of answers must

be offered. First, the housewife living in a village or town from which a rural route starts can even now make practical use of the Parcel Post. Suppose she is buying for a family of five and needs two dozen eggs, two pounds of butter, two pounds of sausage and a dressed chicken. These would weigh about eleven pounds. For fifteen cents, on a rural route, she can have them carried from the farm to her kitchen.

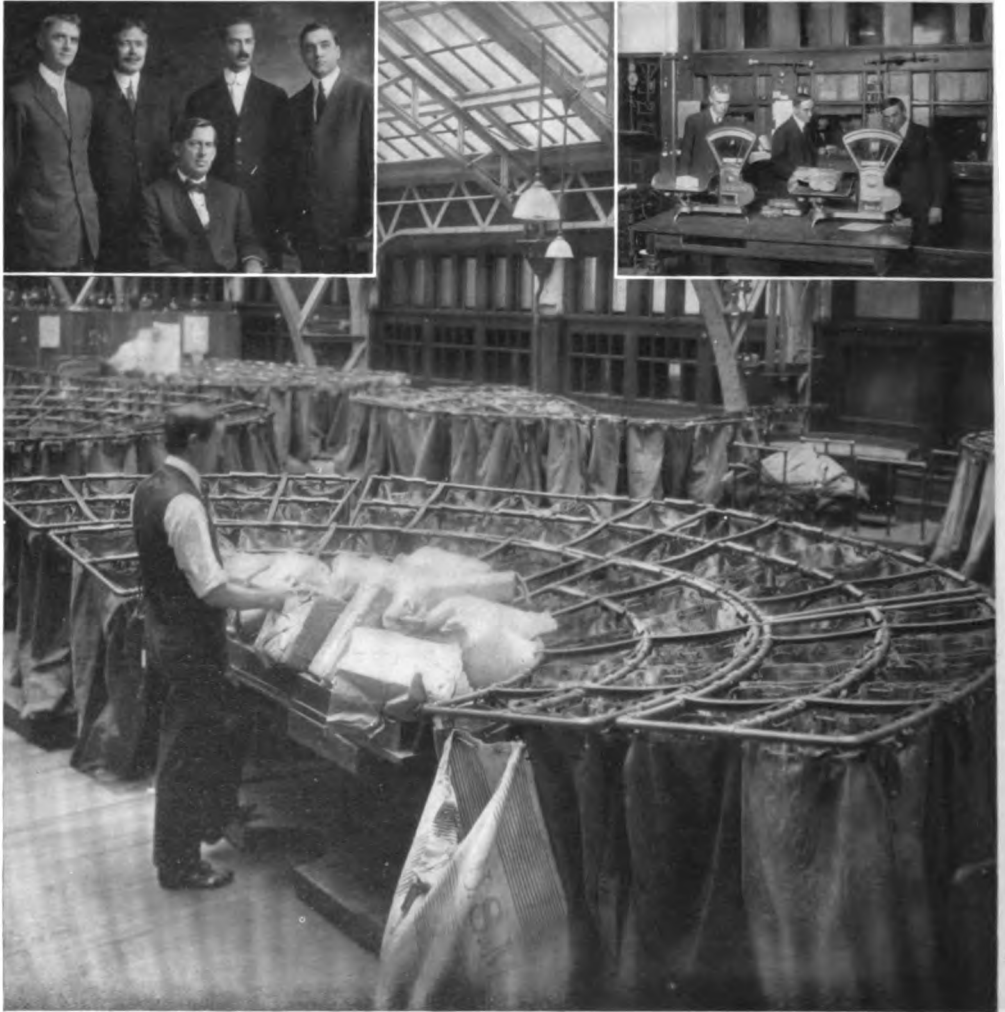
As illustrative of the difference in farm and city prices on these articles I have the exact figures for about a year ago. The two dozen eggs cost 44 cents, two pounds of butter 48 cents, two pounds of sausage 16 cents, and the chicken, three pounds, 30 cents, altogether \$1.38 at the farm, about twenty miles from Washington, D. C. These took the roundabout processes of commerce and cost the consumer in Washington \$2.70. These articles, about eleven pounds, might be made a standing order with the farmer, who would ship them on a given day every week through the postal van, as is done in England, in a limited measure. This would mean \$1.17 saved on that list of

articles, or nearly 100 per cent. of their cost on the farm.

Of course many towns and cities have no rural routes, and so will have to resort to longer distances. The Parcel Post rate would be thirty-five cents if the farmer lived within fifty miles, by air line, forty-six cents if he lived a hundred and fifty miles, and fifty-seven cents if he lived three hundred miles distant. That is, the rate shifts from a cent a pound on the local route up to five cents a pound for three hundred miles.

Probably no greater blunder has ever been committed in the name of serving the people than that committed by the Senate conferees, who, in the closing hours of the last session of Congress, forced the five-cent rate on the three-hundred mile zone, instead of three cents; four cents on the one hundred and fifty mile zone, instead of two, and three cents on the fifty mile zone, instead of one, the lower rates provided in the House bill.

The House rates were formulated on a basis to give the Postal Department one-



INDIVIDUALS AND SCENES IDENTIFIED WITH THE PARCEL POST

- 1 Group of men who figure out the Parcel Post rates and rules: sitting, Robert S. Sharp, Chief P. O. Inspector; standing, left to right, George L. Wood, Superintendent of the Division of Rural Mails, A. A. Fisher, Chief Clerk to Second Assistant Postmaster General, C. B. Hurrey, Chief Clerk to Third Assistant Postmaster General, John C. Koons, Superintendent of Division of Salary and Allowances. (Photo., Harris & Ewing)
- 2 New scales specially made for Parcel Post packages. (Photo., Underwood & Underwood)
- 3 Assorting bin. (Photo., Harris & Ewing)

third profit. The rates now in the bill are so prohibitive as in effect to deprive the Post Office and the people of any profit, by killing the potential traffic.

The House provisions in the Parcel Post bill recognized that the making of rates and other conditions of shipment to protect the Treasury at one end and to move the potential traffic and render the highest public service at the other, was necessarily an administrative, rather than a legislative work. It gave the Postmaster-General, subject to the approval of the Interstate Commerce Commission, power to change the rates, the weight limit, the zones, the classification and all conditions of mailability. With these powers the Postmaster-General can discreetly construct a complete system of transportation for the small shipment, filling the gap that now obtains between the railway minimum of a hundred pounds and the postal maximum of eleven pounds, and giving the public a rate about one-half that now charged by the express companies. It will cost to pay for railway transportation under the present laws, with this traffic added, about one cent a pound for two hundred and fifty miles, and it will cost for postal handling, including collection and delivery, about two and one-half cents for the first pound, running up to about twenty cents for a hundred pounds. Thus, as a tentative proposition, a rate system could be established as follows: Three cents for the first pound and one-half cent for each additional pound up to one hundred miles, and one-half cent a pound for each additional hundred miles of distance, with no rate to be greater than twelve cents a pound. Here you have a rate structure so simple that a child could remember it, and yet one that would yield the postal system about twenty per cent. profit, computed on present cost bases.

Of course the farmers and consumers should have wisdom enough to get together. In England the farmer advertises his prices in the London papers. Farmers within shipping distance of markets, under present rates, must take some means to acquaint the consumer with their supplies and prices. Until credit relations develop between them the farmer can tack on the shipment a C. O. D., under regulations soon to be provided, at a trifling charge.

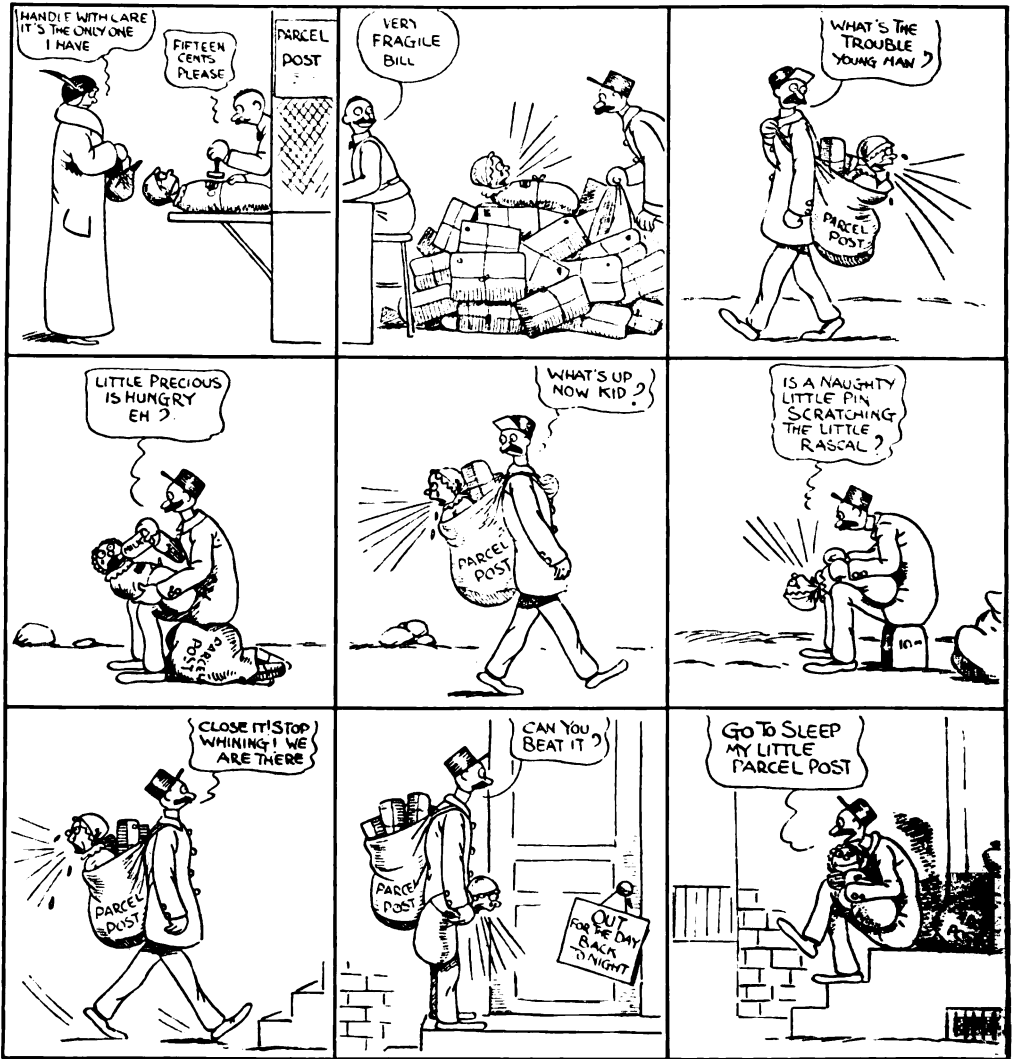
What the farmer can do, the manufac-



POSTMASTER-GENERAL HITCHCOCK INAUGURATING THE
PARCEL POST

turer can do likewise for his retail products; that is, he can advertise and do a direct retail trade, where the rates permit. But this statement is subject to an important qualification, of course. The consumer, in practice, will only deal with the manufacturer where his products are standardized and have a known value and character in the market.

A word to the farmers and truckers who wish to make the best use of their markets. They should take the most up-to-date measures for packing purposes. Paper box manufacturers have already worked out



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containers that will carry eggs, butter, chicken and other farm products without danger of injury or loss. These containers, I understand, may be very cheaply manufactured, and the shipper should examine their availability, both to save himself trouble and difficulty in packing and the possibility of injury to the shipment.

It is going to take some time for both farmers and consumers to learn the art of dealing together, however easy the conditions are made. But farm products usually sell in city markets at about twice what they bring on the farm, and surely this difference in price ought to provide the

ultimate buyer and the farmer sufficient motive and profit to get together very soon. By the time they have learned how to cooperate the extortionate rates and the low-weight limit of eleven pounds will have been removed.

And this brings me to the duty of public men in respect to this subject. In preparing the House Parcel Post bill, at the request of its leaders, knowing that the subject of rates and weight limit and other conditions of service could only be worked out intelligently by administrative methods. I inserted a provision giving the Postmaster-General power to reform the

rates, weight limit, classification of articles admissible, zones, and all other conditions of mailability, "in order to promote the service to the public."

Now, what is the function of a Parcel Post? Obviously it is to move direct from producer to consumer, as the first buyer, instead of the third or fourth, all products sufficiently standardized to permit the consumer to safely buy direct. In order to do this the rates should be as low as the costs of service permit and the weight limit as high as the retail weight of such products ordinarily runs in individual consumption. Other countries have a weight limit of more than a hundred pounds, and Belgium, the paragon in this matter, is proposing to raise its weight limit from 132 pounds to 220 pounds.

The whole subject is now "up to" the Postmaster-General. If the rates are too high, if the weight limit is prohibitive, if the classifications are inadequate, blame the Postmaster-General. Not as a man, of course, but as the institution to which Congress has given the power and invitation to construct a satisfactory transportation system for producers and consumers,

and upon which it has imposed the responsibility to make all these things right. But, oh, what an opportunity for constructive work, which, if well done, in the broadest conception of public progress and public service, would render the Postmaster-General a star of the first magnitude in postal history.

The conditions are such that he can initiate a system that will take the place of the express companies and extend their service to every village and farm, at rates one-half those they have been charging, effectively supplying transportation direct from producer to consumer. He can utilize the fast freight rates and service on the railroads to give rates about one-quarter those now charged by the express companies for articles of shipment that could not pay for the relatively costly passenger train service. In two years he can make enough profit by thus utilizing the rural free delivery structure, now profitless and a dead expense, and out of this fast freight service to make "penny" postage practicable, without changing the postage rates for newspapers and magazines.



FORTY DAYS WITHOUT A RUDDER

The above picture, used through courtesy of the London *Sphere*, is of the British steamship *Snowdon Range*. This big liner, en route from Philadelphia to Queenstown, was pounded by heavy seas, lost her rudder, and for forty days, in wildest weather, drifted at the mercy of wind and wave. Many bold attempts were made for rescue but all were unsuccessful until the vessel, guided by the wonderful luck that sustained her through the ordeal, drifted of her own accord safely into the harbor as shown above. Her entire crew withstood the hardships and were little worse for their experience.

THE NEAREST PORT TO PANAMA

By WILLIS B. POWELL

"FOURTEEN years ago there was so little commerce by sea in and out of Tampa that no record was kept of it. To-day, Tampa ranks tenth of all American cities as a producer of revenue for Uncle Sam." Such is the simple, direct statement of fact advanced by Mr. Powell, secretary of the Tampa Board of Trade in support of his contention of geographical and commercial supremacy for the Florida Gulf port in respect to the opening of the Panama Canal, with its inevitable re-adjustment of world traffic.

NEAREST to Panama of all the adequate Atlantic Coast ports of the United States is Tampa. Tampa lays no claim to being the "original Wilson man," but it does claim to be the "original Panama Canal booster." Other places have talked about port preparedness for the Panama Canal trade and have built on paper steamships to traverse the seas to the big ditch; other places are preparing for Panama Canal expositions. But Tampa has anticipated all of these things. She already has had her exposition. She has her boats in commission. And her port is in readiness to receive the vessels of the seven seas and all that therein is.

It was in December, 1905, that Gov. N. B. Broward caused to be issued a proclamation declaring that in the month of February, 1908, there would be held an International and Isthmian Exposition, in honor and celebration of the commencement of work on the Panama Canal.



Tampa sent a delegation of her citizens to appear before Congress and to seek national aid for the enterprise, and in 1906, Congress, in granting certain concessions, went on record with the following statement: "Tampa is the nearest and most available port of any importance in the United States to the Panama Canal."

Backed up by state and federal aid, there was held in Tampa, in February, 1910, a Panama Canal celebration. Among the distinguished guests of the southern Florida metropolis during the festival period was the Hon. James Bryce, British ambassador to the United States. The representative of King Edward paid the following tribute to the electric energy and zeal which form the keystone of Tampa's commanding position:

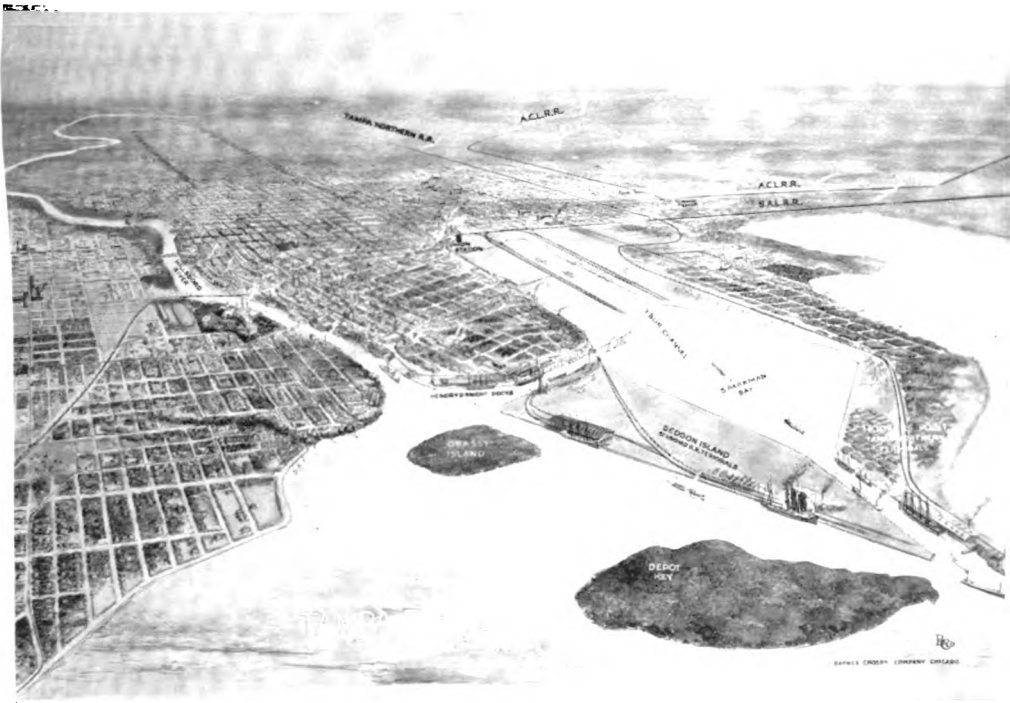
"I have just been hearing from the officers of the United States Army that when they had occasion to use Tampa as a port of embarkation, during the Spanish-



THIS WAS THE PORT OF TAMPA TWELVE YEARS AGO



ONE OF THE 100 CIGAR FACTORIES THAT MAKE TAMPA FAMOUS



BIRD'S-EYE VIEW OF TAMPA HARBOR, 1912, SHOWING ESTUARY IMPROVEMENT WHICH WILL ADD 5½ MILES OF DOCKAGE.

American war, it was then not much more than a fishing village, and it is only within the last ten years that you have risen to a great and flourishing city with a magnificent harbor. You have a seaport unusually favored by nature, and, therefore, with unusually good prospects of rapid development.

"With your bay sheltered, and with deep water, it is not only an admirable outlet for the products of your soil, and for the phosphates which have become such an important article of export, but it is, also, most favorably placed for an international commerce which is rapidly developing, and which we may expect to extend even more strikingly in the future.

"I understand that you are the nearest port, that is to say, the nearest adequate harbor, on the coast of the United States, to the cities opening before long to the great international canal. The canal is the most extraordinary effort that man has ever made to improve on nature, and to make nature subserve his purpose."

While other places have been telling of the worth of the Panama Canal to their

various communities, Tampa, through her far-seeing municipal government, has been industriously building five and one-half miles of deep sea dockage, so as to be prepared for the business which by right belongs to her, and which must come to her when the terminal facilities are expanded.

The story of Tampa's port reads like a romance, yet it is real—so real that the most optimistic sometimes rubs his eyes and wonders if it were but a dream.

Fourteen years ago there was so little commerce by sea in and out of Tampa that no record was kept of it. A year later 32,000 tons were recorded, and the valuation was small. In 1912, the total tonnage was 1,858,000, with a valuation of more than \$30,000,000. To-day Tampa stands tenth of all American cities as a producer of revenue for Uncle Sam. She turns into the United States treasury almost \$2,000,000 a year—in 1912 the total was \$1,901,107.61, or \$200,000 more than that of the previous year. With each advancing year an increase of from \$200,000 to \$300,000 is recorded.

There is a reason for the great increase in traffic, and yet the city has not been able to handle all that has been offered by the trade carriers of the sea. But there is a time coming, and it is not far off, when Tampa will accept and deliver all commodities offered her. Her estuary project, which converts a sawgrass marsh into a 24-foot deep slip, 500 feet wide, and nearly two and one-half miles long, will serve commerce for many years, and provision has been made to swing the vessels broadside of the channel into 400-foot

come true, the State of Florida must needs be greatly developed—her 35,000,000 acres of land must yield merchantable stuff instead of saw palmettos; the State's industries must fabricate more of raw material, and there must be more railroads and better freight rates.

The roads must run to Tampa from the cotton fields above, from the coal and iron fields of Alabama, from the States where marble and cement and brick and manufactured articles of every kind can be drawn upon to make cargo. And these



FROM THE REMOTEST PARTS OF THE GLOBE COME CRAFT TO TAMPA BEARING ALL SORTS OF LADING

slips, and thus more than double the original docking facilities.

Behind Tampa there lie unlimited quantities of phosphate, Fuller's earth, glass sand, fruit and vegetables, lumber, naval stores, cattle, and the products of the mill which will convert our timber into merchantable products. Before us lies the entire world, and it is a big one.

Tampa is not unduly exercised by "dreams of untold tonnage" to be passed through her port from the neighboring territory to the countries below and beyond, to the Far East. Before dreams be-

roads are coming. Already the Atlantic, Birmingham & Alabama Railroad indicates, by dotted lines on its folder, that such a road is in prospect. Already the Atlantic Coast Line Railroad indicates that such a road will be built, and further shows that part of the work is now under construction. The Seaboard Air Line Railroad has bought in the Tampa Northern Railroad and it is understood it will not let the Atlantic Coast Line come into Tampa from the west without it, also, entering the same field.

But dreams and forecasts and tentative



TYPES OF MODERN FAST PASSENGER LINERS THAT REGULARLY MAKE TAMPA A PORT OF CALL

propositions aside—even eliminating the railroad prospects—Tampa will be benefited directly and immediately by the opening of the Panama Canal.

The distances from the various ports in America to the Panama Canal are given in nautical miles by Anderson's tables as follows:

Tampa	1,216
Pensacola	1,340
Mobile	1,358
New Orleans	1,392
Galveston	1,496
Savannah	1,568
Baltimore	1,902
Philadelphia	1,938
New York	1,963

By tables compiled by the Chamber of Commerce of the United States it is shown that the Panama Canal will put Tampa 5,585 miles nearer Yokohama, and save in steaming, with a ten-knot boat, 22.8 days. Japan is using our phosphate. It would have used more were not the freight so expensive. The charter of a vessel which can carry 8,000 tons of phosphate is about \$700 a day. With the opening of the canal phosphate can be delivered in Japan for approximately \$2 a ton less than at present. This will give a great impetus to the phosphate trade of

Florida with the soil-impooverished countries of China and Japan—and be it known that within fifty miles of Tampa there is enough phosphate to supply the world for ages. Tampa's benefit by the opening of the canal is not problematical. It is a certainty, and were it to stop at the phosphate trade she might be content—but she will not be content.

It is the opinion of all wise men of Tampa—which means about 8,000 heads of families—that Uncle Sam has his eyes on the port as a snug harbor in case of war. Hillsboro Bay lies fifty-eight miles from the forts which guard its entrance. There are imposing fortifications there—and a mining squad which, in about an hour's time, can make the narrow channel as dangerous as a fire in a powder-house.

Hillsboro Bay is large enough to harbor the entire navy of the United States. Were the enemy to rush the forts, the attacking ships would forthwith become salvage for beach combers. Tampa's harbor is also as peaceful as a mill pond. A cat-boat can live in its waters during a hurricane—if a hurricane should come this way—but in the archives of the weather bureau none is recorded.

THE SONG OF DEEP WATERS

By JAMES HAY, JR.

*I am the Mother of Commerce—the soft-breasted
mother of the healing streams of trade.*

*I carry vessels heavy-laden with gold to their de-
sired ports, and I bear cargoes of death to their early
graves.*

*I was the hand-maiden of Jewish supremacy in
trade. I built the glory of Carthage. Light-footed,
with the winds as my lovers, I served the ancient
traffic of the Red Sea and braved the perils of the
Indian Ocean.*

*I was the goddess of power on the Euphrates, and
Constantinople and Egypt have prayed at my knee.*

*I made Venice, my favorite child, the mistress of
all her seas a thousand years ago, and to-day, still
dependent on my aid, she towers majestically above
the waters.*

*I explored the Atlantic Ocean, and my fingers
carried the ships of Columbus to a new and mighty
land.*

*I carried from America to Europe the prodigal
stores of gold and silver given up by Mexico and
Peru. But for me, there would be now no great
American Republic, and, without my help, the
wealth of India and China would be unknown to
the treasure vaults of the New World.*

All this—the first blind efforts to sail the seas, the development of the galley, the sailing ship and the steamboat—has come from my teachings. And, before my affrighted eyes, the great battles of history have been fought, and upon the waves, which are the silken fringes of my robe, has fallen the blood of heroes.

I am the Mother of Commerce—of wealth and of woe.

And to-day my power excels that of all other things relating to the commerce of men. I do not stop at bringing to the United States from India soft silks, from Japan splendid paintings, from China jars and pottery, most wonderfully wrought.

Already I have done great things for America. The canoes of Indians have borne from the north to the south costly furs, and brilliant gems, and the fruits of the forest.

Later, larger steamboats have carried from one section of the country to every other section the things wished for by men for utility and those desired by women for adornment.

I am the Mother of Commerce—and, being the mother, I neither plead nor urge. I command!

I wish larger palaces and more gorgeous corridors for my dwelling places. I who have done so much deserve to be given more than others. The channels upon which my rolling steps are made must grow in depth and breadth.

I have given more, far more, to the sons of men than the world suspects. I can do things beyond the dreams of every man if the opportunity is placed within my reach.

To the waterways of the United States are due millions upon millions of our wealth. Upon deeper waterways and wider channels, I, the Mother of Rolling Waters, can do many times over what I have done already.

Every city of great size and overpowering wealth the world over owes its predominance and its pride to what I have given it.

I will lift up your cities. I will add to the wealth of all your people. I am the soft-breasted mother of all the healing streams of trade. I am, as are all mothers of the world, more powerful when more deep.

I have builded the great cities. I have made the great fortunes of men.

Give me the means and I will give you the fruits.

The song of deep waters is a glorious music to-day. Give me the depth and the width for which I yearn, and I will make it a song that finds its echo in the growing of the people and in the gold pieces of your treasury.

I am the Mother of Commerce—and commerce is the mistress of the world.



THE BUSIEST CANALS ON EARTH

By S. A. THOMPSON

*ALTHOUGH authenticated by statistics as accurate as any in existence, the history of the growth of traffic at 'the Soo' reads more like fiction than like sober fact. It is said that in 1850 one old gray horse, hauling a car on a tramway, handled all the traffic which passed over the portage around the Sault de Ste. Marie. * * * * In 1912 the gates of the giant locks swung open for the passage of 22,778 vessels, carrying 72,472,676 tons of freight. This traffic was worth no less than \$817,075,299.*

BACK in 1849, or thereabouts, when the Senate of the United States was debating a bill to make a grant of public lands to aid the State of Michigan in building a canal at the outlet of Lake Superior, Henry Clay rose in his place and said:

"It is a scheme to squander the public resources upon a chimera beyond the remotest bounds of settlement, if not in the moon."

How fate mocks those who, lacking the guidance of inspiration, yet presume to prophesy, was never better shown than in this case. For the grant of lands was made, the canal was built, being completed in 1855, population swept westward in a mighty flood until "The Great Lone Land" was filled with thriving commonwealths—and it is true to-day, and has been true for many years, that a greater volume of traffic is concentrated at the eastern end of Lake Superior than at any other spot in all the world.

After the grant was made by the Federal Government and while the matter was under consideration by the legislature of Michigan, E. B. Ward, of Detroit, who was considered one of the most far-sighted business men of his day, wrote to a member of that body that by advocating "locks of such enormous dimensions, which will not be needed for a hundred years, if ever, you are jeopardizing the success of the whole project."

The two tandem locks in the State canal, against the "enormous dimensions" of which Mr. Ward protested, were each 350 feet long, and 70 feet wide, with 11½ feet of water on the miter sill and a lift



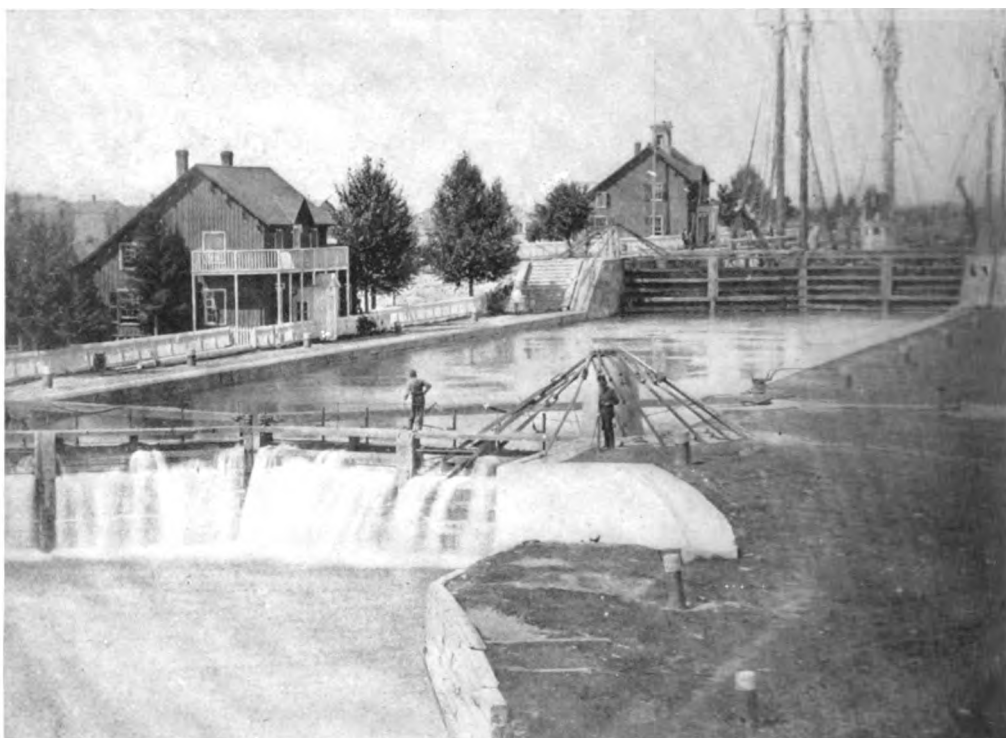
Photo by Bundy

of 9 feet. Mr. Ward was no more of a success as a prophet than Henry Clay. Only fifty-seven years have passed, instead of a hundred, and what do we find? The little locks of 1855, as they now are called, were supplemented in 1881 by a lock, built by the Federal Government—which is 515 feet long and 80 feet wide, has 16 feet of water on its miter sill and overcomes the difference of 18 to 20 feet in elevation with a single lift

—and were blown up with dynamite and superseded in 1896, by a new lock 800 feet long, 100 feet wide and with 21 feet of water on its miter sill.

Meantime a new canal had been built on the Canadian side of the river with a lock 900 feet long, 60 feet wide and 22 feet deep. It would surely seem that three such locks as these could care for all the traffic on Lake Superior until the end of time, but not so. Work is already well advanced on the construction of an entirely new canal on the American side which will be opened to traffic in 1914 and which will have a lock with really "enormous dimensions"—1350 feet long, 80 feet wide and 24½ feet deep at extreme low water, which will mean about 26 feet at the average stage.

Nor is this all, for provision has already been made for building a fourth lock, which is to be of the same size as the one last mentioned—and as soon as that is done it is meant to deepen, and possibly lengthen, the larger of the two locks now in use. All this deepening of locks will call for a corresponding deepening of the channels and, ultimately, of the principal



FROM 1855 TO 1881 THE STATE LOCKS SUPPLIED THE ONLY GATEWAY TO LAKE SUPERIOR

harbors of the lakes. The present standard depth of the connecting channels is 20 feet in earth and 21 feet in rock.

It goes without saying that these improvements have involved a large expense. The first canal and locks cost the State of Michigan about \$1,000,000, the proceeds of 750,000 acres of land granted by the Federal Government. The total appropriations made by the United States for improvements at the falls of the St. Mary's River from 1856 to July 12, 1912, amount to \$12,932,822.19. In addition there has been expended for the operating and care of the canal up to June 30, 1912, \$2,112,654.49, making a grand total of \$16,045,476.68.

This includes only the expenditures immediately at the falls. Work on St. Mary's River at points below the falls has been done at a cost of \$8,409,115; work at various points on the "Twenty Foot Channel" has cost \$3,365,000 and \$12,000,000 has been expended on the channels in the Detroit River. While the work in Detroit River is of benefit to the traffic of the other lakes as well as to that of Lake

Superior, it had to be done if the big boats that could get through the locks at St. Mary's Falls were to run to and from the ports of Lake Erie.

Whether we consider the \$40,000,000 spent on the channels of the lakes, the \$25,000,000 spent on the St. Mary's River or the \$16,000,000 used directly at the falls, the amount is large enough to warrant the question whether the expenditure has been justified by the results.

Although authenticated by statistics as accurate as any in existence, the history of the growth of traffic at "The Soo" reads more like fiction than like sober fact. It is said that in 1850 one old gray horse, hauling a car on a tramway, handled all the traffic which passed over the portage around the Sault de Ste. Marie. During the first year the little locks were open, only 14,503 tons of freight passed through. It was not until twenty-one years later that 1,000,000 tons was reached; in 1892 the tonnage was more than 11,000,000; in 1899 more than 25,000,000; in 1906, nearly 52,000,000; and in 1912 the gates of the giant locks



THE AMERICAN CANAL AT ST. MARY'S FALLS. WEITZEL LOCK ON THE LEFT, POE LOCK ON THE RIGHT

swung open for the passage of 22,778 vessels carrying 72,472,676 tons of freight.

The growth of traffic by decades and the total tonnage from 1855 to 1912, inclusive, are shown in the following table:

1855-1864.....	1,203,358
1865-1874.....	4,829,247
1875-1884.....	14,868,639
1885-1894.....	80,343,218
1895-1904.....	253,002,697
1905-1912.....	441,837,790
Total.....	796,084,949

One can gain a clearer idea of the tremendous effect which the opening of the canal has had upon the commerce and industry of the United States by noting the commodities which constitute the bulk of the traffic.

One item of the commerce in 1855 consisted of 1447 net tons of iron ore shipped from the newly-opened mines on the Marquette range in Upper Michigan. Except for that first year the tonnage of iron ore has always been greater than that of any other commodity, and during most of the time it has been greater than that of all others combined. Last year the shipments of iron ore amounted to 46,303,423 net

tons, which exceeded the combined weight of all other articles by more than 20,000,000 tons. The total shipments of iron ore through the "Soo" canals have reached the colossal total of 490,539,866 tons. It is due first to the great deposits of high-grade ore in the Lake Superior region, and next, to the cheap transportation of that ore made possible by the building of the canal, that the United States ranks first among the nations of the earth in the production of iron and steel.

As might be expected, since the Northwest is a country of cold winters, the shipment of coal began at the first opportunity. Only 1441 tons went west in 1855, while the shipments for 1912 were 14,931,594 tons, and the total shipments from the beginning have been 157,686,117 tons. Think of all the locomotives run, the factory wheels turned, the dinners cooked and the homes made comfortable by the burning of this vast quantity of coal!

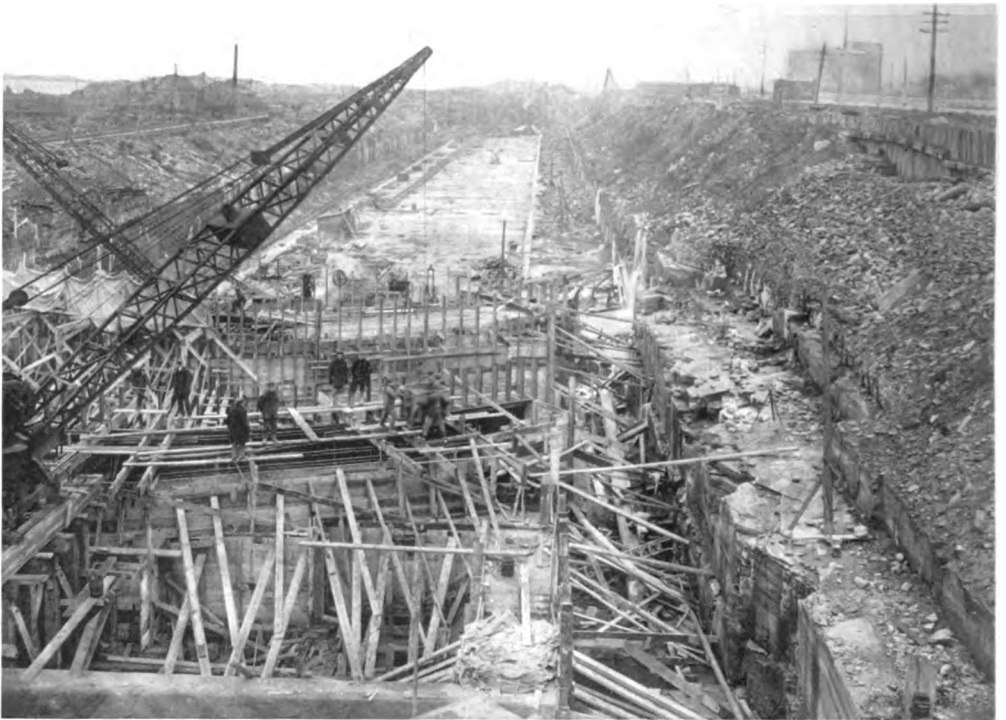
Naturally, also, flour was one of the first commodities to be moved through the canal, 10,289 barrels being shipped

during the first year. For the first seventeen years all the flour went westward, then the current turned in the other direction and grew swiftly in volume, the total for 1912 being 8,652,153 barrels and for the entire time 176,010,733 barrels.

Except for a few bushels in 1859 and 1861, which were probably used for seed, no wheat was shipped until 1870, when 49,700 bushels are reported. By the next year this had increased to 1,376,705

Besides the items already mentioned, there have been carried through the canals 3,067,435 tons of copper, 6,926,423 tons of manufactured and pig iron, 10,930,749 barrels of salt, 20,871,692 tons of general merchandise and 1,797,994 passengers.

Beginning with 1887, the U. S. engineers have reported the valuation of the cargoes passing in and out of Lake Superior. The detailed report for 1912 is not yet published, but using the same unit values as



WORK IN PROGRESS ON THE NEW AMERICAN LOCK, WHICH WILL BE THE LARGEST IN THE WORLD

bushels, and following the settlement of Minnesota, the Dakotas and, still later, of the Canadian Northwest, the flood of golden grain grew ever greater until it amounted, in 1912, to 174,086,456 bushels, and the total for the entire time is 1,702,988,678 bushels. It took 880,053,665 bushels of wheat to make the flour already mentioned, besides which there have been 651,692,255 bushels of other grain, making a grand total of 3,234,734,598 bushels of grain which the "Soo" has helped to pass on to feed a hungry world.

were employed in 1911, the traffic of last year was worth no less than \$817,075,299, and the total value since 1886 amounts to \$8,272,148,001. A conservative estimate gives \$350,000,000 as the value of the 28,685,631 tons of traffic carried previous to 1887, making a grand total for the whole period of \$8,622,148,001.

This means that if the whole \$40,000,000, which has been expended on locks, canals and channels from Lake Superior through to Lake Erie, is charged against the business of Lake Superior alone—



BLOCKADE OF LAKE LINERS AND FREIGHTERS AWAITING RIGHT-OF-WAY THROUGH "THE SOO" CANAL.

although much of it is of value to the commerce of other lakes, as well—it amounts to only five cents per ton of weight and to less than one-half cent per dollar of value of the traffic which has already been carried.

Who can tell what further growth of traffic the future is to bring? The late General Poe, who built the lock that bears his name, once said: "The way this lake commerce grows is amazing. I have watched it for thirty-five years, but neither I, nor any one I know, has been able to ex-

pand his ideas as fast as it has grown. The wildest expectations of one year seem absurdly tame beside the actual facts of the next. I will not live to see it, for I am an old man now, but some day this lock of 1881, which is now the finest in the world, will be blown up with dynamite, just as the little locks of 1855 were, to make way for one with 26 feet, perhaps with 30 feet of water on its miter sill."

Wouldn't it be interesting to know what Henry Clay would say, now?



INDIAN CANOES IN ST. MARY'S RIVER RAPIDS



OFFICERS OF WOMAN'S NATIONAL RIVERS AND HARBORS CONGRESS
AND EXAMPLES OF "THE RIVER BEAUTIFUL"

Mrs. Joseph M. Strout, Portland, Me., president (upper left); Mrs. Mary M. North, Herndon, Va., recording secretary (upper right); Mrs. Katherine H. Stuart, Alexandria, Va. (lower left); Mrs. F. H. Newell, Washington, D. C., second vice-president (lower right)

THE FAIR ADVOCATES OF WATERWAYS

By MRS. MARY M. NORTH

*"IN conjunction with their campaign for the deepening of channels, the women are working for the sanitation and beautification of waterways. * * * * * The tie has grown stronger, * * * * * while the stakes have been strengthened and the lines lengthened' until even the islands of the sea are interested and are become a great power for good." The "river beautiful," a characteristically ideal aim of the Woman's National Rivers and Harbors Congress, is sounded by Mrs. North in her resumé of the utility campaign.*

The Woman's National Rivers and Harbors Congress is as patriotic an organization as any that exists. It strikes at the root of loyalty to country, by working to preserve to posterity the natural resources which a too prodigal ancestry came very near destroying, and which some of the present generation, were they not held in check by legislation, would finish, in their eagerness for wealth.

The organization came into existence June 29, 1908, with but seven members, in Shreveport, Louisiana, through the efforts of Mrs. Hoyle Tomkies, the first president; Mrs. Frances Shuttleworth, the first corresponding secretary, and Mrs. A. B. Avery, the first recording secretary. They pledged their fealty to the National Rivers and Harbors Congress, and from that time to the present the tie has grown stronger, the work has increased, while "the stakes have been strengthened and the lines lengthened" until even the islands of the sea are interested, and are a great power for good.

The third biennial convention of the Woman's National Rivers and Harbors Congress was held in Washington the fourth, fifth and sixth of December. The officers and state presidents from forty-two commonwealths gave very encouraging reports of the work, and there were, too, reports from Hawaii and the Philippines. The women are also working for the sanitation and beautification of waterways.

Among the speakers at the convention were: Henry S. Graves, U. S. Forester; M. O. Leighton, Chief Hydrographer, U. S. Geological Survey; Judge Watkins, D. C. Ellis, and C. J. Blanchard, Statistician of the U. S. Reclamation Service.

The officers elected are: President,

Mrs. Joseph M. Strout, Portland, Maine; first vice-president, Miss Katherine Stuart, Alexandria, Virginia; second vice-president, Mrs. F. H. Newell, Washington, D. C.; corresponding secretary-treasurer, Mrs. Elmer G. Laurence, Cincinnati, Ohio; recording secretary, Mrs. Joseph B. North, Herndon, Virginia; auditor, Mrs. H. G. Whiteside, Louisville, Kentucky; vice-presidents-at-large, Mrs. T. E. Wilder, Illinois; Mrs. E. A. Houseman, Connecticut; Mrs. A. Barton Miller, South Carolina; Mrs. Joseph E. Ransdell, Louisiana; Mrs. D. U. Fletcher, Florida; Mrs. Walter J. Frear, Hawaii.

There are federated clubs representing about twenty thousand women who are taking a personal interest in the movement.

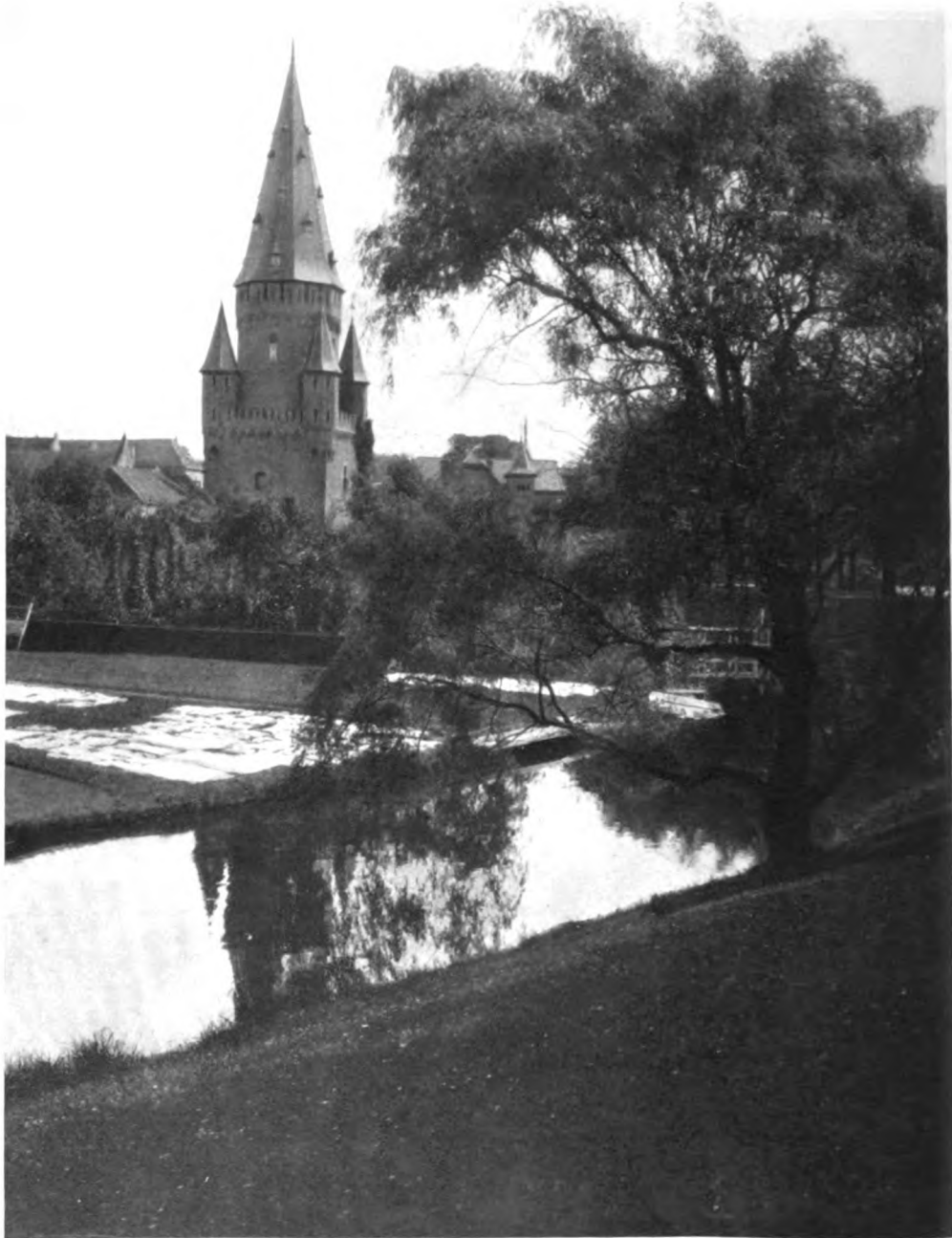
The objects of the organization are:

The promotion of the improvement of the meritorious inland waterways and harbors, the preservation of the forests of the nation, and the conservation of the natural resources.

To endeavor to secure proper legislation, both national and state, together with adequate appropriations.

To educate the people to the importance of the fact that the National Government, having control and improvement of the rivers and harbors of the country, is bound to discharge these obligations promptly and by sound business methods, chief among which is the placing of annual appropriations for rivers and harbors on a parity with other great appropriation bills.

We urge the continuation and the extension of such policies as will secure large forest reserves at the head waters of all river systems and general forest development throughout the nation.



THE DROEGENAPSTOREN, ZUTPHEN, PEERS AT ITS REFLECTION IN THE MOAT

THE ELUSIVE DUTCH RHINE

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

*"THE Rhine, we learned at school, * * * * drains to the North Sea. Quite so. But where?" This question, so naively asked by Mrs. Albrecht, must lure many a reader to his or her geography again, and the tracing of the storied Rhine to its doubtful place of surrender to the sea, is the "motif" of the second article descriptive of inviting foreign waterways to be contributed by this faithful "Cicerone" and her artist husband, whose scenes so gorgeously enhance her poetic observations.*

IT seemed a little ludicrous that summer—we admit now that it seemed so to us, an idle pretext for a charming watery excursion that needed none—to announce an exploration of the mouth of the Rhine. A very reasonable river sometimes conceals its source for entirely private reasons, but its mouth is usually a self-evident fact; a bit wide-spread, perhaps, as in the Nile or our own Mississippi, but for that reason all the more recognizable. The Rhine, we learned at school, rises in the higher Alps and drains to the North Sea. Ah, yes! Quite so. But where?



You fortunate travellers, who have seen its small beginnings in the glaciers of the Rheinwald valley or the Toma lake, its milky flood at Reichenau, its broad blue mirror at Lake Constance, its green billows foaming white over the rocks of Schaffhausen; who have come to it from the Vosges or the Black Forest and followed it down by crag and vineyard and castle to Cologne, where then does it go? To Holland and the ocean. No doubt. But where? Beneath Leiden's bridges there creeps a slow-moving weary river which, at Katwijk's sluice-gates, must be lifted into the sea, and its neighbors call it the Rijn. It has borne that name for centuries. The country over which Leiden rules, the land it drained, was the Rijnland, yet today engineers deny absolutely that one drop of the mighty German river mirrors this old Dutch town. Where then does the great flood go, the flood which swirls by the Lorelei, reflects grim Ehrenbreitstein, bathes the Pfalz? "Dregs of

French rivers," Napoleon called the Netherlands, and, doubtless, one day none too long ago in the world's lengthy history, but far and dim compared with America's four hundred years, the Netherlands were nothing but the boggy delta of that Rhine whose mouth we seek in vain. Possibly the engineers are quite right; no Rhine water may reach that stream that alone carries the name to the sea but—possibly, also, no current crossing the southwestern Netherlands to the North Sea is utterly devoid of some drops of that great river which passes Mainz and Cologne.

Soon after entering the Lowlands the Rhine suffers division, one arm curving northward, carrying the name past Arnhem and on to Wijk, while the stronger stream rushes swiftly on as the Waal past Nijmegen's hills. At this parting of waters we began our voyaging, tracing now the name, now following the greater current, doubling, retracing, crossing from branch to branch, fascinated alike by the unsolvable riddle and the adventures of the way. For one can find adventures even upon peaceful Dutch waters; adventures from the past made vivid by Motley's luminous pages, thrilling, inspiring, incomparably glorious adventures here given their proper setting; adventures of the present, ludicrous, exasperating, stimulating, depressing occurrences common to those who travel in places "off the beaten trail."

And, although very close to it, the quaint old cities upon these waterways are off it. Very little known to their neighbors, the average tourist rarely

makes their acquaintance, although most of them are readily reachable by road and by water. Boats coming down the Rhine call regularly at them and—those especially whose course lies wholly within the Netherlands—at many a place between. They bring a very various and very transient cargo—cherries for the Rotterdam market, cows for a Breda fair, horses for Arnhem perhaps, goats, pigs, sheep, potatoes, cheeses for anywhere. With one's own motor boat one would be far more independent, but how many funny scenes, pleasant chats, friendly faces would then be lost to memory?

Romantic legend does not thrive in the open country of the lower Rhine as it does among German rocks and castles; nevertheless these picturesque old towns along its branches have interesting tales to tell, interwoven of fact and fancy, and if the flat shores are less picturesque than beetling crags, the flood mirrors many a towering wind-mill, quaint water-gate or stately church with chiming bells which can calmly challenge the beauties of the upper river.

Just before the Rhine reaches Arnhem it is linked by canal to the Gueldrian Ijssel and made to send some of its waters northward to the Zuider Zee. Old as the days of Drusus is this canal. The river, a highroad for wandering tribes, for conquering armies, for wandering merchants and soldiers of fortune since the days when Europe was young, brought down upon its current in time those Roman soldiers and engineers in whose train roads, canals and bridges, camps, castles and towns rose in might.

They sought here a swift road to the North Sea and found none. They watched the great river overflowing its banks each springtime, losing itself far to the westward among the rich lands that it then laid waste. The canal served a dual purpose. It drained ground for Roman camps; it gave Drusus his path to the sea. Although the Rhine here loses name and identity, a goodly portion of it, with the "silvery Ijssel," must flow smoothly by Zutphen and Deventer to pretty Kampen and the Zuider Zee.

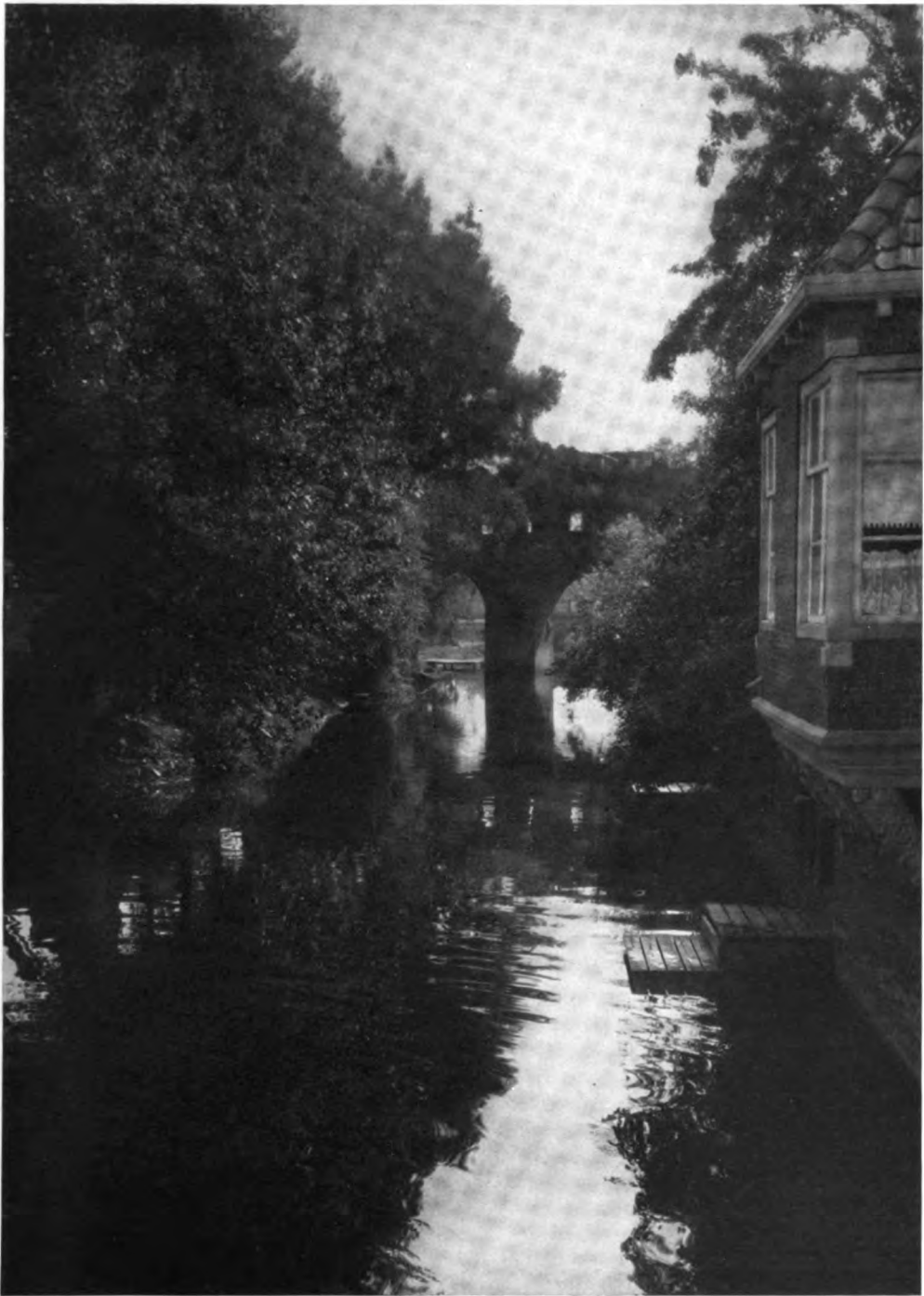
Shall we follow the name westward or this "scape-goat" current northward? Arnhem can easily wait; its riches have so often been sung, its praises so loudly

chanted. We have made up our minds not to like it. It is self-sufficient. Let us go rather to Zutphen, of whom none, but Motley, tells us a word, and that of so long ago. We take it for granted that you know it, that brave story of Sir Philip Sidney, who got his death-wound here. It is very sweet and very piteous, and gallant like all that concerns this knight without reproach, and if you do not know it we shall nevertheless not venture upon the telling of it; for since Motley did it, no one else can do it so well again.

Between flat green meadows the Ijssel flows, and those smooth green walls which look to my untrained eyes like marvelously well-kept banks, a thought too regular for beauty, are dikes protecting those pleasant meadows from flood. Gone are all the dreams of childish fancy, the sheer straight walls imagination pictured, an imagination full-fed by tales of heroic small boys stopping a leak with a pudgy finger and saving a town. Poor showing those walls of fancy would make in flood-time, no doubt—but how picturesque they were! Even yet I seem to regret them, although I have learned upon Holland waterways many a lesson in real values where water is to be dealt with.

Zutphen sits unconcernedly beside her silvery river; well protected is she from flood upon her well-kept banks. Towers soar from a mass of greenery, red roofs twinkle, blue blouses gleam softly, all doubled upon the broad stream. Romantic, Zutphen is not, but of good war stories she has plenty, and the quaintest of winding streets. Curious mixture of "modern improvement" and mediæval custom, Zutphen lights her streets with electricity, but posts a watchman nightly in her tall church tower to look for fire.

"What was that horn blowing all night?" I asked the waiter as I rubbed my eyes sleepily over the morning chocolate after my first night in Zutphen. "The Watchman, Mevrouw, he looks for fire." "Where was the fire?" "But there was none, Mevrouw; he blew because there was none, every hour to the north and the south and the east and the west to let us know that we may sleep in peace." Now I, for one, have a rooted dislike to being waked up every hour to be told I can go to sleep again, and upon this point Zutphen and I never agreed. She did not



ZUTPHEN'S OLD WATERGATE. FROM WITHIN THE CITY



THE KORENBEURSBRUG AND THE STADHUISTOREN, LEIDEN
NO RHINE WATER MAY REACH THE RIJN, THAT STREAM THAT ALONE CARRIES THE NAME TO SEA

express her feelings openly, as I did. But I know she is wondering from what uncivilized, unguarded town we came. What happens when the watchman discovers a blaze it was never our good fortune to learn; the city slept and waked and slept placidly again throughout our stay.

Zutphen's great church is dedicated to St. Walburga and if you tarry long in the Netherlands you will be glad of it. Lady saints seem especially unpopular there and St. Martin has everything his own way. It is nice to meet a female now and then. The church has suffered much from fire, flood, time and restorers, but is imposing in its hugeness and most picturesque with its many jumbled roofs and crooked tower, while its cool green glass windows are the delight of a summer day. The church library is deservedly famous. Not only for the picture it gives of a monkish reading-room of long ago, but for its sprightly legends. Its rows of dark reading desks and benches are chipped and hacked as if by mischievous school boys rather than studious men. One does not wonder that the books were chained. They were rare and precious things five

centuries ago, and if they seem a bit heavy for the thief, there were ways of smuggling under cloaks—a man did not balk at weight in those stout days. The rarer books illuminated in color and gold are, today, shut in glass cases, but a sufficient number remain upon the desks, more than you will read although you may sit down and turn the pages if you will. Perhaps as your truant eyes roam over the brick floor they may notice some queer marks. They can tell a better story than any you will find in the books. Zutphen has written several tales concerning these footprints and at least one poem. Practical minds—those that insist upon slow even slopes for dikes—insist that the builder's dog trotted in after his master upon the soft, unburnt clay, but everybody else knows that the devil himself came in a wolf's skin, to see what the monks might be doing there, for he loved neither books nor book makers. Or perhaps—perhaps—why were those books chained?—perhaps to claim his own among those who sat sedately upon the long benches and slowly turned the broad leaves.

Zutphen has very beautiful bells in her Wijnhuistoren, but in the vaults below no rich Rhine wines are stored today, no city magnates gather nightly there to exchange stories—or plan municipal improvements—over hugh goblets of grape juice. The name is a dry deceiver. City weigh-house, police bureau, museum of antiquities, the tower has become; a few goblets—goblets such as Franz Hals loved to paint—are there still, but carefully ticketed in the museum's cases and empty as is the Wijnhuis' name.

Another delightful tower stands among the trees of the Singel—Zutphen's water girdle, once her moat. An old city gate in 1444, the Saltpoort, it later became a citadel—the Engelburg—but in 1511, when a certain Drogenap was chosen as city musician, he took up his residence in the gate and by his name it is known to this day—the Drogenap-toren. Since his time it has been a prison and a warehouse, but at present serves the city as a reservoir.

Its usefulness does not impair its picturesqueness—there is nothing prettier of a summer morning than the tower's proud lift above the tree-tops as it peers at its reflection in the moat. Below it is a stretch of grass with linens bleaching, a clump of roses, a pretty, blue-gowned girl polishing a brass kettle in the stream; beyond it the old wall stretches, pierced with windows, topped with chimneys, draped with vines, every portion serving as a house or a support for one.

We have a peculiar love for the Drogenap-toren. It is our consolation for a disappointment. In another town, whose name I may not mention, we were strongly recommended by a Dutch friend, who

thought he spoke English, to see the "Straining Tower." We expected something like that at Pisa, I think. In a land where most towers lean more than a trifle the expectation was not unreasonable. We spent a precious afternoon in finding it. It was the city's filtering plant.

Even more picturesque than the Drogenap-toren is the old water-gate spanning the Berkel. Seen from within it is the only possible background for the jumble of flower-decked balconies, overhanging gardens, shaky bow-windows, rickety landings, slippery steps and crumbling

walls with which Zutphen fringes the tiny river that runs through the town on its way to the IJssel. Gay with color, quaint in line, quivering in soft reflection upon water where tiny boats pass unceasingly, backed by the dull-red turrets and arches of the gate and the green of the land beyond, the picture is as lovely as anything Dordrecht offers. No architect could approve the buildings and no artist would quarrel



FROM WITHOUT THE GATE IS EVEN MORE DRAMATICALLY PICTURESQUE

with them—yet curiously none come here.

From without the gate is, in its concealments, even more dramatically picturesque. One expects it to dissolve to soft music and disclose some fair damsel bending from a balcony or the Knight of the Swan sailing slowly down to a trysting place at the front of the stage. I never heard that Lohengrin included Zutphen in his itinerary of Rhine ports; it is a little off his track, which is noticeably the "beaten trail," but he would have found quite a suitable stage-setting ready there.

There are other enticing corners of Zutphen, quaint houses to see, war stories to hear; there are boats unloading peat and timber on Zutphen quays, prosaic



THE YOUNGEST MEMBER OF THE CREW WHOSE HOME IS THE RIVER BARGE

commodities that gain a certain picturesqueness from the liquid light, the idle hour—there are things yet to be done, to be learned, to be remembered and we would gladly linger, but may not; let us go on then to Deventer before the spell grows too strong for our breaking.

Deventer we never loved as we did Zutphen. Why, I do not know; does one ever know the secret of liking? It is a prosperous, attractive city, spotlessly clean, as befits a Dutch town. It is ancient. It claims anywhere from twelve to sixteen centuries and hints at more. It has its tall church tower and chime, its quaint houses, its Waag, its Stadhuis, its maze of winding streets, all the equipment of a charming town. In point of war memories and stories it is second to none. Its "koek" is famous over the Netherlands. I think that is the source of my indifference to Deventer. Every well-provided Dutch town has an especial "sweetie," and Deventerkoek, a sort of gingerbread made with honey, was not what I had expected of it. The fault is in me; the chorus of its praises admits no other discordant note. I like Deventer stories far better; less sweet, and spicier. One must have floated down with the Rhine water; it recalls Bishop Hatto—with a difference.

Once upon a time long ago (there was famine in the thirteenth, fourteenth or fifteenth centuries and the time is one of

these, but why be specific?) there lived in a certain house upon Deventer's "Brink," which you may see to this day, a miser who used all his gold to corner the grain market. (The translation is *not* literal.) His cellars were soon filled to overflowing, and when dearth and hunger began to rule the miser's prices waxed higher and higher. Now in our day he would have become a multi-millionaire; not so in those mediæval ages that we call so rude. Avengers of the poor and hungry came, the corn-merchant's enemies, the rats—but—and here is the delightful part of the tale—they ate neither the corn nor the miser. They rolled themselves round and about in grainsacks and flour-bins, they sped to the harbor and into a convenient ship they shook from their fur all the burden of corn it could carry; in a trice they were back to repeat the trick. In no time at all the ship, filled to the water's edge, sailed away; the avaricious old man died of starvation in his empty cellar! Look well at these tiles in the house front, for they recall the story. Two represent rats and the third a meal-sack. The gevelsteen (gable-stone) once bore the Israelites crossing the Red Sea, but time and weather have smoothed out waves and wanderers alike; moreover they had no least thing to do with the miser.

The tale of Charles of Gueldres and his two block houses, which he poetically called the Morning and Evening Star, but which the Deventrians promptly dubbed Kijk-in-de-Pot (Peep in the pot) and Al-te-na (all too near) is also good, but too long for this page. That stone star upon the old Waag refers to it and the old copper kettle hard by has a gruesome history; the bridge of boats across the IJssel recalls an ancient compact made good by fire and blood. In the Berg Kerk—Mountain Church—but the "mountain" is but a few feet high—lies buried a very puzzling Eleanor of England, whom all writers mention and none define. In these stones, these picturesque gables, these historical puzzles, there is much to keep one at Deventer, yet we did not linger. The bells were chiming the Pilgrims' Chorus as we went away toward Kampen. We found it beautiful and appropriate.

In passing, one *must* stop at Zwolle, although it lies upon the Zwarte Water, not the IJssel, and apparently can have

nothing of the Rhine. Ringed with water and smooth green banks, tree-planted, adorned with towers, with its beautiful Sassenpoort, hallowed by the memory of Thomas à Kempis, strong in its martial stories, gay at our visit with all the fun of Kermis, who could pass it by?

But if Zwolle is charming, what shall one say of Kampen? Where find adjectives to express its loveliness by sunlit day or moonlit night? It is the habit of Amsterdam—which lies just across the Zuider Zee—to poke fun at the Kampeners. "Simple Simon" would be quite at home there, they say, or words in Dutch like to it, and Zwolle tells a tale or two to prove it. We are privately certain that Zwolle is jealous of Kampen. "Pouff!" says Zwolle, "you are cross because we did not make a fuss over you, like Kampen did." It's true, Zwolle was very indifferent to strangers and Kampen most cordial; we admire Zwolle but we love Kampen; one is an acquaintance, the other a friend. But listen to the stories.

"The grass once grew upon Kampen's tall town-tower," says Zwolle, "so the wise burghers hauled up a cow to eat it up. Now a Dutch cow being used to very flat meadows, not steep hillsides, could not keep its footing and fell to its death, whereat Kampen professed great amazement. The grass continues to flourish." The story has a familiar ring. You will hear it again and maybe again before our voyage is done.

Another story concerns revenues. Each gate earned a certain sum in tolls. "Let us double the number of gates," counseled a "city father," "and then we shall have twice as much money!"

Kampen, like every other Netherlands town, has suffered severely from fires and more than once found that her fire apparatus would not work at the right moment. "The night before every fire we must have drills and see that the squirts are all in good order," gravely resolved the Town Council. It is to such stories that Kampen is indebted for the smiles that greet her name. But say Blauwevingers—Bluefingers—in Zwolle and see what happens!

Henri Havard relates that she sold her best chimes to the Westerkerk in Amsterdam and was paid in copper coins so small that her councillors' fingers grew



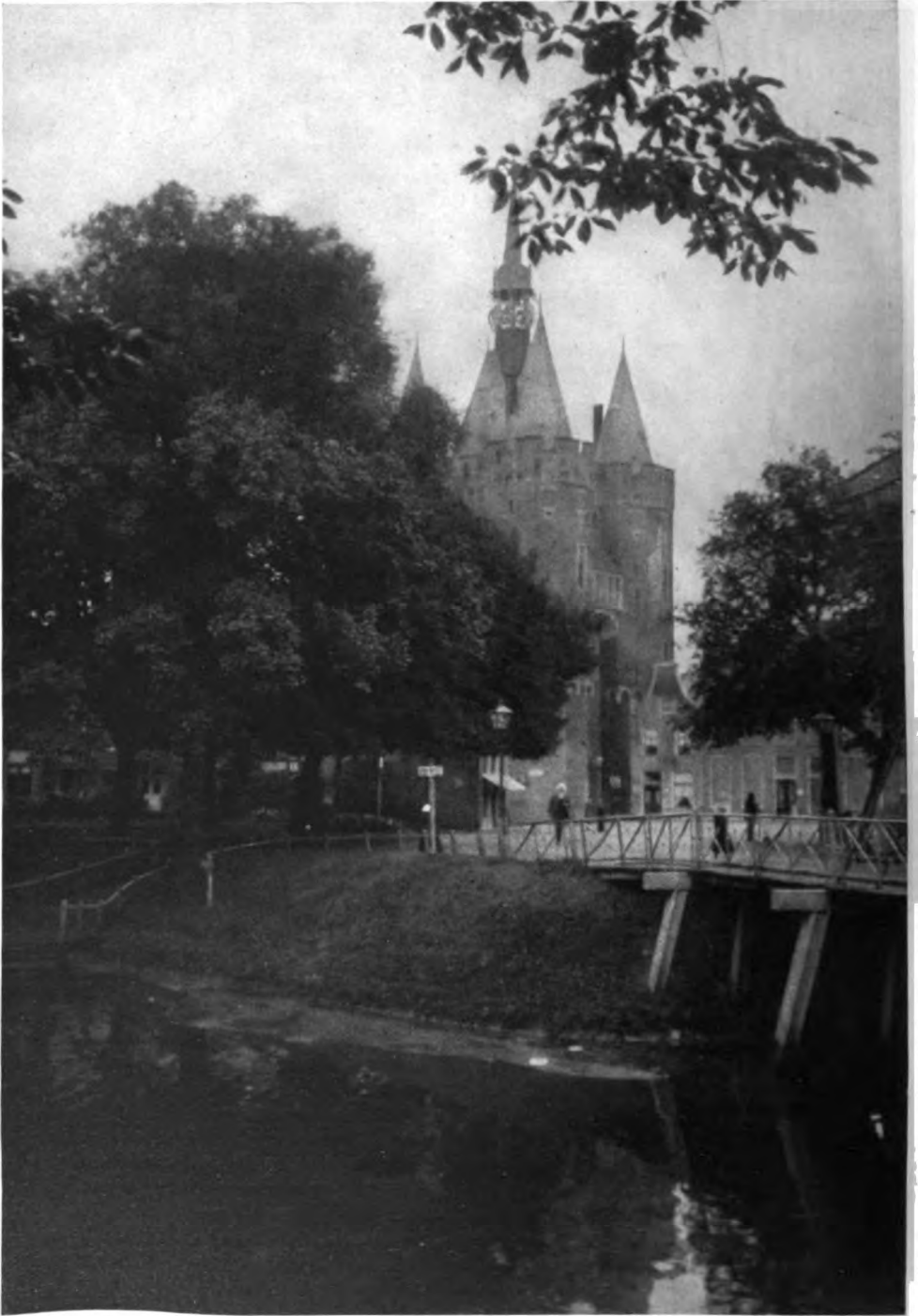
FLOWER-DECKED BALCONIES LINE MANY A DUTCH STREAM AND ENHANCE THE CHARM OF THE WATER ENVIRONMENT

blue in the counting of them, whence the name they have to this day.

Zwolle says he is all wrong. Her Sassenpoort—from which he borrowed the bells—never had any. She never sold a carillon to Amsterdam. She never had blue-fingered men. She waxes very wroth but—she swallows her wrath for business purposes. She advertises "Blauwevingers" as her local sweetmeat, sugars the pill as it were and still counts the coins. And the Westerkerk at Amsterdam certainly has a beautiful set of bells.

Kampen does not scold, as Zwolle does, over her stories; she ignores them. She sits calmly by the Ijssel ringed by broad canals. Her great Koornmarktspoort—the Gate of the Grain Market—still white as when it served as a landmark for sailors, looks out over her broad quay and back over the town in strength and dignity. Upon the land side two other charming gates peer through the trees which have replaced her old walls into a moat given over to water fowl, to aquatic plants—a cool, green, delightful place upon a summer day.

Within the town are a great church or two and a charming Stadhuis whose like is not elsewhere in the Netherlands. Built in 1350, the interior has suffered much by fire; nevertheless the old "vierschaar" or judgment hall of the sixteenth century is today the most perfect room of its kind in the Kingdom. Here Kam-



THE SASSENPOORT, ZWOLLE, FROM ACROSS THE MOAT



THE PEISTERPOORTGE, AND ALL THAT REMAINS OF ZWOLLE'S OLD WALLS



THE RHINE STEALING TO SEA

BENEATH LEIDEN'S BRIDGES THERE FLOWS A SLOW-MOVING STREAM—ITS NEIGHBORS CALL IT THE RIJN

pen's antiquities are enshrined, a few bits of silver, the "moffenbeker" or fool's cup (although fool is too harsh a translation of the Dutch "mof"—a clown or boor—a word more like our own school boy's "Muff"), stone cannon balls, illuminated books, copper squirts said to have been used in subduing rebellious citizens by a judicious shower of boiling oil. Alas, for picturesqueness! A Dutch friend says they were merely old fashioned fire-extinguishers! Why not watering pots? Boiling oil has such a nice "shuddery" sound at the safe distance of four or five hundred years. Why spoil the story?

If matter-of-fact commentators can spoil Kampen stories, they cannot mar Kampen streets and quays. One should certainly be there for at least one Sunday, or perhaps, Kermis. Then the farmers of Kamper-Eiland come in with wives and daughters for service or for merry-making. There is much quaint costume, a thronging of picturesque high-wheeled carts and brown-sailed boats by the quays. When Schokland, a Zuider Zee island, was declared unsafe, the bulk of its population removed to Brunnepe near Kampen and they, the fishermen of Urk and of Marken and Volendam, baggy

of trousers, gay of shirt, are daily seen in Kampen markets.

Red-sailed boats rock in its inner harbors, tarry nets hang drying in the sun; beyond stretch rich green meadows, cattle-dotted, behind rise roofs and towers of the quaint old town.

There are comfortable little hotels in Kampen, there are breezes from hay-scented meadows or from the salt sea. There

is a beautiful river at one's door, where boats rock invitingly, there are islands to visit, streets to explore, the prettiest of little parks for idle hours, a long roll of history for one's studious days; almost we forgot in the pleasant little city past which a slender branch of a branch ultimately reaches the sea, that we meant to follow the great and justly famous Rhine stream not to its one goal, but its many.

So, reluctantly, we turned from sunny, friendly Kampen to stately Arnhem, there to take again the northern branch of the Rhine where we had left it for Drusus' canal.



A MARKEN FISHERMAN

EDITOR'S NOTE:—This is the second article on foreign waterways, by Mrs. Albrecht. The third will appear in the May issue. The subject will remain the "Dutch Rhine" and the text will be profusely illustrated with the art photographs of Mr. Emil Poole Albrecht.

THE TWIN TEXAS WATERWAYS

By ALBERT SIDNEY BURLESON, M. C.

"WHEN Texas is compelled to buy corn or wheat from these grain states (Kansas and Nebraska), she is compelled to pay Liverpool prices to get it." There's "food for thought" in this truth driven home by Representative Burleson, of Texas, than whom there is no better posted student of present-day economic and industrial conditions in the Lone Star State, with their crying need for bigger and broader channels of commerce in the form of internal waterways.

TO realize for the prodigally rich Texas coastal plain watered by the Brazos and Trinity Rivers an era of prosperity rivalling that which followed the discovery of petroleum at Beaumont and the recovery of sulphur in Calcasieu, just across the Louisiana boundary from Beaumont, the people and the industrial and commercial interests of Texas are importuning the National Government for federal aid to



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advance the improvement of the two waterways named. Ere the career of Port Sabine as a shipping center shall have fully dawned, yet another and greater port, known as Bryant Heights, or Freeport, located but a few score miles to westward on the Gulf shore, will send forth its ships to every quarter of the globe. Prominent New York financiers are actively behind the latest plan to rank the Texas seaboard among the great shipping areas of the national coastline. So may be gained for Texas, in relation to the maritime traffic which will surge through Panama, the place that was held by Venice in relation to the commerce of the Mediterranean in the Middle Ages.

The Brazos and Trinity Rivers rise in the northern and northwestern parts of the State, and meander nearly due south through one of the largest and most fertile single bodies of rich agricultural land in the nation. The area drained by these twin streams produces annually one-fifth of the great cotton yield of the United States, besides cereals and other crops, with almost an equal per acre average with the States which produce those com-

modities alone. When it is considered that only about twenty per cent. of this land is actually under cultivation, the most optimistic will be unable to overestimate the future of this famous section.

There were forty-four different boats with a tonnage ranging from 65 to 480 that were engaged in the Trinity River trade, and 28 with the same average tonnage on the Brazos, in the years from 1867 to 1878. These boats, during

favorable seasons and stages of water, made trips up the Trinity to within sixty miles of Dallas, and, on the Brazos, to within fifty miles of Waco.

The improvement of the Trinity from Dallas to the Gulf and the Brazos from Waco to the Gulf, is the only constitutional, national and safe solution of the problem of excessive freight rates with which the people of Texas are now confronted. The improvements will furnish the cheapest possible transportation, and will make the rivers the most efficient regulators of railway freight rates in all the territory contiguous and tributary to them.

The Brazos and Trinity Rivers run through the most fertile sections of the State, with a never-failing season for all kinds of crops. The rivers, on both sides, invariably form county boundaries. There are fourteen counties along the Trinity with a combined population, in 1910, of 464,834. They have an area of 9,021,160 acres, of which about 2,595,683 acres are under cultivation. The 1,166,398 acres planted to cotton produced in 1911, 577,664 bales of 500 pounds each. The remaining 1,429,285 acres, planted to corn,

wheat, oats and other crops, show only about 28 per cent. to be under cultivation.

There are twelve counties along the Brazos River, with a combined population of 318,809, in 1910, having a total area of 6,376,320 acres, of which 2,315,411 acres were under cultivation; 1,072,538 acres were in cotton, producing 547,921 bales, and the remaining 1,242,873 acres were planted in various crops, as on the Trinity River, with sugar and rice in addition, but with only about 36 per cent. of the total area actually cultivated.

There are annually produced in the fourteen counties along the Trinity and Brazos 1,125,585 bales of cotton, as against the total of 1,223,809 bales produced in the 117 counties of both Arkansas and Louisiana, and the total of 1,124,601 bales raised in the forty-two counties along the banks of 1247 miles of the navigable rivers of Alabama; or as against the production of 1,203,545 bales in the seventy-two counties of the great cotton growing State of Mississippi, or the production of 1,075,826 bales in the seventy-one counties of North Carolina.

On account of the almost continuous stretch of overflow bottoms in the Mississippi basin, between New Orleans and St. Louis, few towns could locate along the banks of that great waterway in the interval named. The opposite is the case when the Brazos and Trinity Rivers are considered. These streams are favored with high lands that are above overflow on one side or the other, every few miles, from the proposed heads of navigation—respectively Dallas and Waco—to their mouths. Thus the towns that will locate on these points above overflow will furnish a large local traffic, equal to or exceeding that handled by the boats navigating the Upper Ohio and its tributaries, and as soon as the Trinity and the Brazos Rivers are opened to continuous navigation a vast population will flow into these sections, there to find homes and prosperity.

Besides the agricultural resources there are outcroppings of brown or lignite coal on the banks of both rivers. On the Trinity it is found in more than twenty places from 125 miles below Dallas to Riverside, covering a distance of two hundred miles, in layers or veins of from two to twelve feet in thickness. On the Brazos,

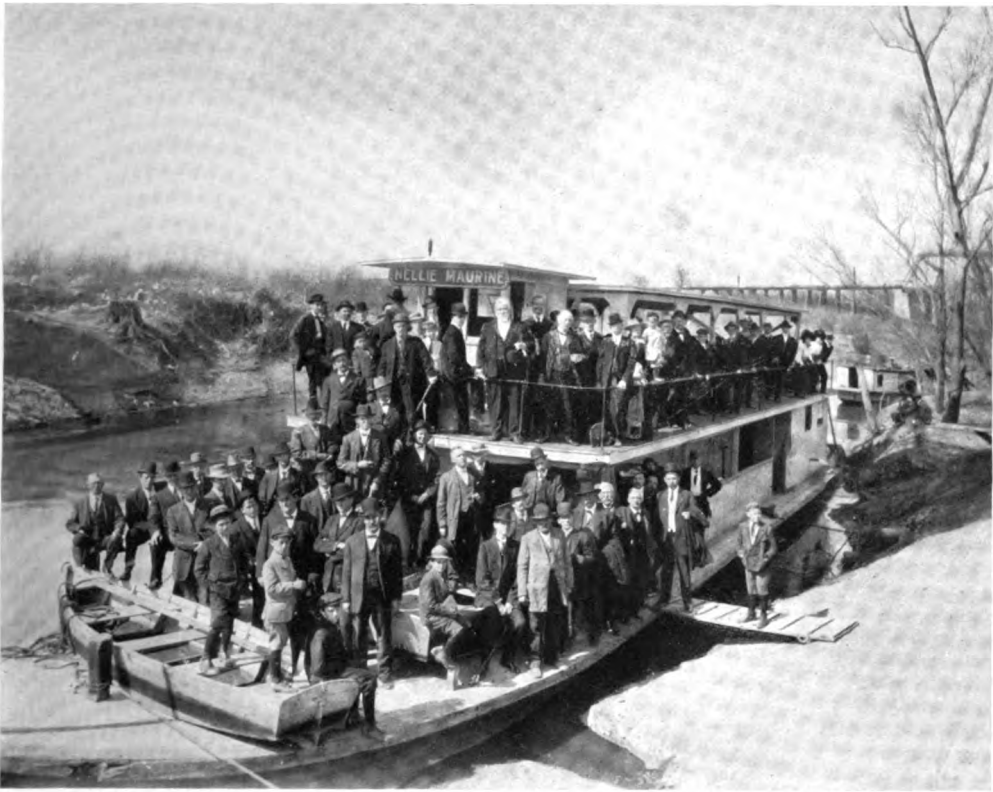
about one hundred miles below Waco, a vein eight feet in thickness is exposed for more than half a mile. The width of the lignite belt on the Brazos extends for more than eighty miles.

By a patented process, of great economic value, both gas and ammonia are recovered from the Texas lignite, while ammonium sulphate, a by-product, is rapidly finding a market throughout the Southern States as a standard fertilizer. The slack from the lignite mine operations, hitherto regarded as waste, is now industrially exploited to an extent sufficient to warrant the statement that Dallas and surrounding cities will have the benefit of producer gas converted into electricity which will be transmitted over high potential wires and delivered over the city at a rate of from 18 to 20 cents per kilowatt hour, where now 75 cents per kilowatt hour is paid. Natural gas, to successfully compete, will have to sell at 15 to 25 cents.

The average export freight rate from the great grain-growing States of Kansas and Nebraska, via Galveston, to foreign markets is 19 cents per 100 pounds, or 10.6 cents per bushel on corn, and 11.4 cents per bushel on wheat.

While doubtless it is true that only a slight per cent. of the crops raised by these States seeks the markets of the world by way of Galveston, yet the producers in those States have received the great advantages of a competitive water route to the Atlantic seaboard and to the markets of the world. Not only have the rates out of those States been reduced, but by reason thereof the producers of these crops have received an increased price for their commodities, which increase amounts on the average to 5 cents per bushel, both on wheat and on corn, aggregating more than \$20,000,000 per annum. The amounts saved and realized annually by the farmers and producers of the States of Kansas and Nebraska on their grain crops, and by cheap freight rates on other commodities bought, sold and used by them, more than double annually all the sums appropriated and expended for the improvement of the harbors of Galveston and Sabine Pass.

Not only have the producers of the States named been immeasurably benefited, but the consumers in the great cities and the lake ports and the entire inland population of the Eastern States



A BARGE-LOAD OF TRINITY AND BRAZOS RIVER IMPROVEMENT ADVOCATES. COL. W. S. DUNCAN, OF DALLAS, ON BRIDGE

and of the Atlantic Coast cities have profited fully \$40,000,000 annually on account of the cheaper transportation forced by the competition of the Galveston port.

For several years the freight rates on wheat from Duluth, Minnesota; Milwaukee, Wisconsin, and Chicago, Illinois, to New York and other Atlantic ports by lake-and-canal and by lake-and-rail, a distance varying from 1000 to 1500 miles, were from 5 to 7½ cents per bushel for wheat and 4½ to 5¾ cents per bushel for corn.

The rate charged on corn, when it is transported over one line or system of railroad, from any point in common-point territory to Galveston, is 8.4 cents per bushel; when transported over two or more lines of railroad, or systems, it is 9.8 cents per bushel. On wheat, the rate when transported over a single line is 9 cents per bushel; if transported over two or more lines it is 10½ cents per bushel.

It will thus be seen that in Texas, for a distance of from 190 to 400 miles from

Galveston, or an average distance of about 300 miles, the rate on grain is almost as high as it is from Kansas and Nebraska to Galveston, and it is also higher than the rate charged from lake points to Atlantic ports. The rate on grain from Kansas points to Texas common-point territory is 30½ cents per 100 pounds, or 18.3 cents per bushel on wheat and 17 cents per bushel on corn. It has been, and sometimes still is, the case that Texas is compelled to buy corn or wheat from these grain States, and when she does she is compelled to pay the Liverpool price to get it. The rate to Galveston is 23 cents per 100 pounds, or 13.8 cents per bushel on wheat, and 12.8 cents per bushel on corn.

The great saving which must accrue to the people of Texas when these rivers have been improved for continuous navigation is indicated in a report made by Assistant U. S. Engineer Watt after he had spent a full year in an investigation of the advisability and practicability of improving the

Trinity River. Mr. Watt estimated that \$1.00 per bale on cotton and \$4.00 per ton on general merchandise would be a reasonable rate by river from Dallas to Galveston, and that this rate would allow the boat owner a profit of about 50 per cent. annually above expenses and interest on his investment.

There were ginned and marketed in Texas for the year 1902, 2,475,881 bales of cotton, and Mr. Watt estimated that the Trinity River zone would affect the rate on 1,247,773 bales and that the saving over the ruling freight rate would be as follows:

164,000 bales at an average of \$1.50.	\$	247,485
410,202 " " " " "	50.	205,101
359,554 " " " " "	2.00.	719,108
312,987 " " " " "	1.00.	312,987
<u>1,247,773</u> " " " " "	1.19.	\$1,484,681

It is believed that the Brazos River zone would have affected the rate on at least 850,000 bales on the same general averages, with a saving of \$1,071,500, or a total for the two rivers of \$2,556,181.

As the crop of 1911 was nearly double that of 1902, a conservative estimate shows a saving for the latter year of at least \$3,000,000. It is estimated that the cotton crop furnishes about one-fifth of the entire tonnage of the State; therefore the saving in freight rates in the zones affected by the two rivers would have amounted, in 1911, to fully \$5,000,000.

The reader will gain a better understanding of the freight rate situation in Texas from a statement of the conditions which prevailed in 1872, while there was steamboat competition and prior to the Interstate Commerce Law and the formation of the State Commission.

The Houston & Texas Central Railroad was completed to Dallas in July, 1872, a distance of 265 miles from Houston, and to McKinney, 31 miles north of Dallas, in the same year. On September 1, 1872, that railroad issued a freight rate sheet establishing the rate on cotton from Corsicana, 54 miles south of Dallas and 211 miles north of Houston, and the other stations named, to Houston, as follows:

Corsicana to Houston, 83 cents per bale.
Rice to Houston, 88 cents per bale.
Ennis to Houston, 93 cents per bale.
Hutchins to Houston, \$1.03 per bale.
Dallas to Houston, \$1.05 per bale.
McKinney to Houston, \$1.20 per bale.

The present rate to Houston from all these points is 45 cents per 100 pounds, or \$2.25 per 500-pound bale.

The rate on cotton from Houston to Galveston on September 1, 1872, was 60 cents per bale, net, which made the rate from the above points to Galveston as follows:

From Corsicana, \$1.43 per bale.
From Rice, \$1.48 per bale.
From Ennis, \$1.53 per bale.
From Hutchins, \$1.63 per bale.
From Dallas, \$1.65 per bale.
From McKinney, \$1.80 per bale.

The present rate on cotton from Houston to Galveston is 30 cents per bale. The present rate to Galveston from all points above named is \$2.55 per bale.

On September 1, 1872, the ocean rate on cotton from Galveston to New York by steamer was \$4.59 per bale, in gold, and by sail \$2.65, in gold. The present rate from Galveston to New York is 36 cents per 100 pounds, or \$1.80 per bale.

The present rate by rail from the points named above to New York is \$4.05 per bale, as against \$4.30 per bale from Dallas to New York, September 1, 1872, by rail-and-sail, and from Corsicana to New York, \$4.18.

The through rate on general merchandise by rail-and-sail on September 1, 1872, was 42½ cents per 100 pounds New York to Galveston, 22½ cents per 100 pounds Galveston to Houston, and \$1.33 per 100 pounds Houston to Dallas; a total of \$1.98 per 100 pounds, as against \$1.72 per 100 pounds by ship-and-rail at present, a reduction of only about 13 per cent.

The reason for the excessive freight charges between Galveston and New York at that time was the cost of lighterage from the ships at deep water, about seven miles from Galveston, to the wharves at Galveston. The cost on cotton was \$1.00 per bale. It will be remembered that no improvement had been made on the Galveston channel and harbor up to that time, and the water over the bar was very shallow.

At the time of issue of the foregoing freight rate tariff, September 1, 1872, the Trinity River was regularly navigated as far up as Porter's Bluff, about 18 miles east of Corsicana. There were many obstructions in the river, and its natural



SCENE AT LOCK AND DAM NO. 1, THIRTEEN MILES BELOW DALLAS
SHOWING IMPROVEMENT EFFECTED IN NAVIGATION OF BRAZOS RIVER

condition did not permit such a degree of navigation as might expect to compete with railroad transportation. The low rates at which the railroads carried cotton—*i. e.*, 83 cents from Corsicana to Houston—destroyed steamboat competition at that time.

It will be observed that the railroad extended its line through that portion of the State, first northwestwardly to Hempstead, 50 miles from Houston, and within 4 miles of the Brazos River, and then continued within 4 to 6 miles of that stream, to Bremond, opposite the falls on the Brazos, 100 miles below Waco, and 143 miles from Houston. It then turned its line northeast to the then head of navigation on the Trinity, Porter's Bluff, 18 miles from Corsicana. So, by the cheapened freight rates and the quicker transportation, the Houston & Texas Central Railroad took away the steamboat traffic on both the Brazos and the Trinity Rivers. Boats however, continued to run for two or three years afterwards, but the conditions on both the Trinity and Brazos Rivers—neither of them having been improved—were such that on neither could boats profitably compete with the railroads, especially when they were forced

to carry commodities at such low rates of freight. The following tables illustrate the contrast in railway rates prevailing for the transportation of general merchandise:

To New Orleans, from Shreveport, a distance, by rail, of 323 miles, and by river, of more than 600 miles:

CLASSES IN CENTS PER 100 POUNDS

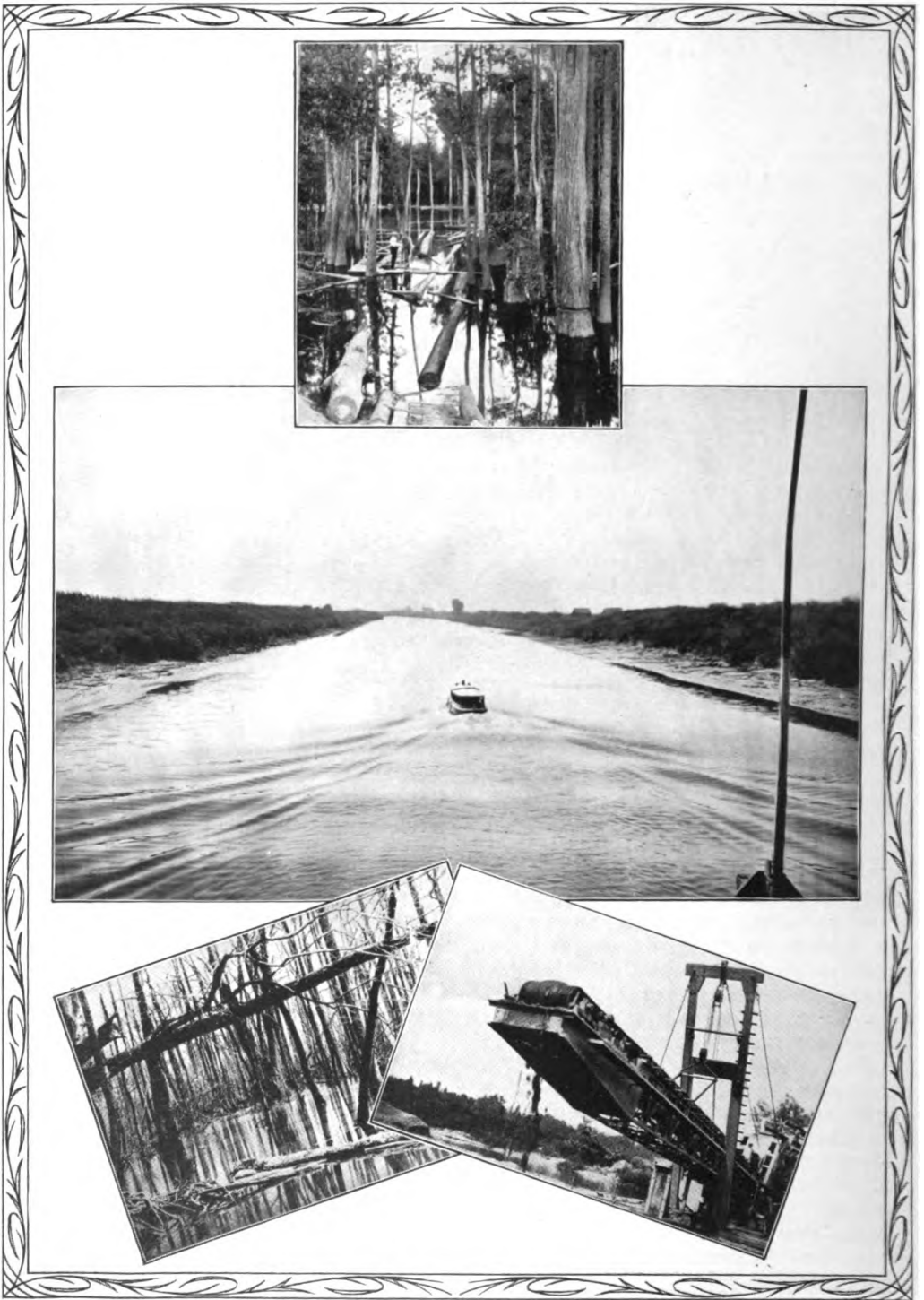
LESS THAN CARLOADS					CARLOADS				
1st Class	2nd Class	3rd Class	4th Class	5th Class	Class A	Class B	Class C	Class D	Class E
.60	.50	.40	.30	.22	.25	.20	.17	.16	.15

To interior Texas (common rate) points *not accessible* by water transportation, from Galveston:

CLASSES IN CENTS PER 100 POUNDS

LESS THAN CARLOADS					CARLOADS				
1st Class	2nd Class	3rd Class	4th Class	5th Class	Class A	Class B	Class C	Class D	Class E
.87	.78	.65	.61	.47	.49	.43	.36	.25	.19

It goes without saying that when the steamboats ceased to run, the freight rates were greatly raised and that they have continued excessive ever since.



LOGGING ON THE OCMULGEE (TOP)
 THE STOCKTON (CAL.) SLOUGH STRAIGHTENED AND DEEPENED BY DREDGING (CENTRAL). DRAINAGE NEEDED HERE (LEFT)
 TYPE OF GOVERNMENT DREDGE USED TO RECLAIM SWAMP AREAS

DRAINAGE CANALS FOR NAVIGATION

By M. O. LEIGHTON

WITH drowned America drained, rivalry between railroads and waterways will be prevented by a surfeit of traffic on both." The development of swamp waterways for the traffic of wide areas of contiguous territory is a logical part of the principle of reclamation of the low, marshy wastes of the country, declares Mr. Leighton, who is Chief Hydrographer of the U. S. Geological Survey. Drainage canals are utilized for the movement of farm produce in Holland and in our own Louisiana.

FEW men agree in all things that concern this waterways business. One will not go far wrong if he accepts this disagreement as positive proof that the cause is of consequence and worthy of profound consideration. Great men have no disputes concerning things of no consequence. In that disagreement lies ultimate safety; out of that disagreement comes the final satisfaction of all varied interests. There is, however, a certain harmful tendency in the championship of issues that surround a great public question. Men become so busy in contending for certain details that they habitually forget others, concerning which there can be no argument, and out of which there may come just that concert of good feeling that would direct all minds into close harmony. So it is that a reminder of obvious things usually strengthens a cause already strong. This article will therefore remind waterways advocates of a line of argument that may render good service.

Swamp drainage is an idle fallacy unless it be tied hand and foot with transportation. The business of transportation has, on the other hand, no greater field of development than in the swamp and overflow lands of the United States. So thoroughly mutual is every necessity of both that their identity is well-nigh merged. The most distressing sight in all the industrial world is that of the farmer with a big crop in his field, a profitable market in the distance and no adequate or reasonably cheap transportation between the one and the other.



© Harris & Ewing

Perhaps we may call the railroad the lion of transportation. If so, we may reasonably call the inland waterway the lamb. In the drained swamp land they will abide peacefully together and there is no situation in commerce in which they will be of so great mutual benefit. For the railroad is the agent by which the crops, especially the perishable ones, may be quickly transported to a distant market, while the water-

way will be the useful means of local collection of these commodities for delivery at a railroad shipping point. For the bulkier and less perishable products the waterway and the railroad will serve according as either is permanently, or, for the time being, the best fitted. With drowned America drained, rivalry between railroads and waterways will be prevented by a surfeit of traffic on both. Why is this so?

The waterways of the swamp-land country will always traverse the centers of production. With natural waterways this is not always the case. A river has a relatively fixed location and must generally be improved for navigation along its natural course, however tortuous or inconvenient. While it is true that many industries will naturally move toward well-improved navigable rivers, it is equally true that the majority of them must be fixed as to location by other considerations. It would probably be of advantage if the improved Ohio River would take its course through the coal regions of Indiana and Illinois, but it will not. Some profit might accrue if the furniture mills

of North Carolina were located on the proposed coastal waterway; but they cannot be. It would manifestly be of advantage if the ore-carrying interests on the Great Lakes could dock their boats at Pittsburgh. This desire has resulted in a project for an artificial waterway for ore transshipment from Lake Erie to Pittsburgh. A dozen other examples might be cited to show that in many respects our natural waterways do not conform in location to the most profitable commercial

age purposes is also sufficient for navigation. If in any given case this is not true of the main canals and the larger laterals, the additional cost of adjusting them to the navigation requirements will be comparatively small. And is it not a significant fact that the very necessities that require the location of drainage canals in proximity to the land to be benefited also serve the local requirements of navigation?

As has already been suggested, there are two apparent classes of prospective



A LOGICAL PLACE FOR A WATERWAY
A TYPICAL CYPRESS SWAMP SCENE IN OLD LOUISIANA—THE TRUNKS RISING FROM WATER POOLS

highways. To remedy this we resort to railroad spurs or artificial canals and the cost of the latter is usually a large item in transportation. After all the final test of the feasibility of such a canal is the relation of its cost to its commercial benefits, and the preponderance of the former over the latter has stifled many an otherwise worthy project.

When, however, the great swamp regions are considered, it is plain that the cost of artificial waterways is borne only in part, and frequently in very small part, by traffic. Canals are required in the drainage of swamp lands. In the larger swamp regions the required size for drain-

water traffic in swamp-land regions. The first is local transportation from farm to shipping point, whether that point be a rail or water connection. The drainage canal or the larger laterals merely take the place of the farmer's market wagons. Small barges of light draft under tow by small power boats can reach the fields along any drainage canal system. The products of the fields lying back from the main canals can be delivered to these barges by short haul. This is an old, old scheme in Holland, and is working successfully in Louisiana and possibly in some other parts of the United States. The second class of water traffic in swamp

lands is merely an extension of river steamboat traffic along the great canals of the larger drainage systems. Of course, this will be limited in its scope to those canals that are by drainage necessities made sufficiently large for the purpose.

Under the conditions above briefly sketched is it not clear that inland water navigation will eventually find its most favorable field in the swamp regions of the country? Has it not always been of

The close relationship between drainage and waterways improvements has been officially recognized in a bill introduced into the Senate of the United States by Senator Williams of Mississippi. This bill provides for national drainage under conditions and methods which require no explanation here. The section of present importance is that which provides that in case any canal system to be excavated under the supervision of the Federal



JERICO DITCH, DISMAL SWAMP, VA.
TREES OF SECOND GROWTH ON LEFT—CANEBRAKE FOLIAGE ON RIGHT

tactical business advantage to be able to legitimately charge off a large part of the construction and maintenance costs of a given commercial project against another project in which those charges are a natural consequence? Supposing such a thing were possible in the proposed schemes of improvement of the Ohio or Mississippi Rivers, or in any of the great waterways projects of the country! The need for a waterways propaganda would be very short-lived because the objects thereof would have been accomplished.

Government is sufficiently large or can, at reasonable cost, be made sufficiently large for navigation purposes, an examination and report thereon shall be made by, or under the direction of, the Chief of Engineers, U. S. Army. In case of favorable recommendation, the project becomes eligible for treatment by Congress as a navigation project under the same procedure that now prevails with respect to rivers and harbors, the Federal appropriations to consist of the additional expenditures required to increase the capacity of



WHY NOT A FUTURE CANAL INSTEAD OF THE EXISTING
APOLOGY FOR A HIGHWAY?

the proposed drainage for navigation purposes.

We have noted the fact that the transportation field, by rail and water under swamp-land drainage, promises enough to satisfy even the most greedy propagandist, wherever in the realm of traffic his interests may lie. It will be of final interest here to conservatively estimate what may be the value of produce that will be subject to transportation in the day when our swamp lands receive recognition. We will confine this estimate to those regions in which water transportation is likely to be an important feature.

Leaving out of consideration the States in which the swamp lands are scattered

in relatively small parcels, and including only those regions in which the swamps are so extensive and continuous as to require large canal systems, suitable for navigation, the total area is in round numbers 55,000,000 acres. Allowing 20 per cent. of this for uncultivated area occupied by buildings, towns canal surfaces, etc., there is left a net area of 44,000,000 acres, which in the day of complete swamp reclamation will be subject directly to water transportation service as above described. Swamp land which under drainage and cultivation will not produce a marketable yield of \$40 per acre is exceedingly rare and poor stuff. The transportation business may therefore look forward to an ultimate annual traffic in farm products equivalent to about \$1,760,000,000, in addition to the enormous quantity of supplies and equipment which must annually be transported into these regions.

It does not take much imagination to see that the inward bound tonnage will be large. The factory is ever following close to the source of supply. The enormous production of which these reclaimed lands are capable will offer the incentive and be the foundation of varied manufacturing industries. This is especially true since the potential wealth of this acreage will be in reach of the cheapest of transportation—water transportation via the drainage ditch. All this means population—another word for transportation business.

Some say that the inward bound tonnage will equal that outward bound. However this may be, even the most conservative interpretation will show so gigantic a transportation industry that there can be no question concerning the importance of the field.



THE APPARATUS THAT CLEARS THE WAY
TYPE OF U. S. ARMY ENGINEER CONVEYER CHANNEL DREDGE EMPLOYED IN SWAMP DRAINAGE OPERATIONS

EARLY HISTORY OF THE ERIE CANAL

By GEORGE CLINTON, JR.

"THE fleet which had made the trip and a large number of other vessels proceeded to a point off Sandy Hook. The Governor then completed the ceremony of 'commingling the waters of the lake with the ocean' by pouring the contents of one of the kegs into the sea." Such is the keynote of Mr. Clinton's article, which continues his series begun in the initial issue of this magazine, wherein he treated the preliminary constructive period of that great artificial waterway, to which New York owes much of her supremacy.

III. THE CONSTRUCTION PERIOD

IT is difficult for us at the present day to realize the conditions under which the work was prosecuted. In those days there were no contractors for public work, no special appliances for excavating, the country was thinly populated, transportation was difficult, weather unfavorable, labor hard to procure and those who undertook the contracts had no large resources of capital. There was, however, no lack of enthusiasm, and under all the handicaps referred to little difficulty was found to obtain men who were willing to undertake the contracts. The work was subdivided into small sections so that no contract would be too large for a single contractor to handle, advances of money were made to the contractors by the State and assistance given in other ways to enable them to accomplish their several undertakings.

Various devices were resorted to to lighten the labors of the contractors and special tools were invented to aid in excavation, so that the work of construction steadily progressed in spite of the difficulties under which the contractors labored. Not only were the natural difficulties great, but the lack of engineers having a practical acquaintance with canal construction was a serious handicap.

Efforts were made to obtain the services of foreign engineers, but without success, and the surveyors employed by the Commission were compelled to educate themselves to the work. Among those who made their reputations and displayed high



ability in this branch, James Geddes and Canvass White should be particularly mentioned. In fact, it is due to their services and untiring efforts that construction became possible at all.

It is interesting to note here that while the work was going on the waterproof cement, which has become the subject of a large industry in this State, was discovered by a Doctor Barto and its use

developed and made practical by Canvass White. Before this discovery it had been proposed to import from Europe waterproof cement for use on the canal.

Work on the middle section advanced so satisfactorily that in 1819 the Legislature authorized the commencement of work on the eastern and western sections, and this work was started and prosecuted under similar difficulties, but with like satisfactory progress. The middle section was completed in 1820 and its completion was the subject of a celebration at Syracuse on July 4th of that year, which attained proportions unusual for that period.

The commencement of work on the eastern section and the completion of work on the middle section involved interference with the work which had already been done by the Western Inland Lock Navigation Company, and as the commissioners had been unable to come to terms with that company for acquiring its rights, the Legislature enacted a law in 1817 providing for condemnation of them. Armed with this authority, the



From a mural painting in the DeWitt Clinton High School, New York

THE WONDER OF THE FIRST VOYAGE THROUGH THE NEWLY-OPENED ERIE CANAL FROM THE LAKE TO THE ATLANTIC

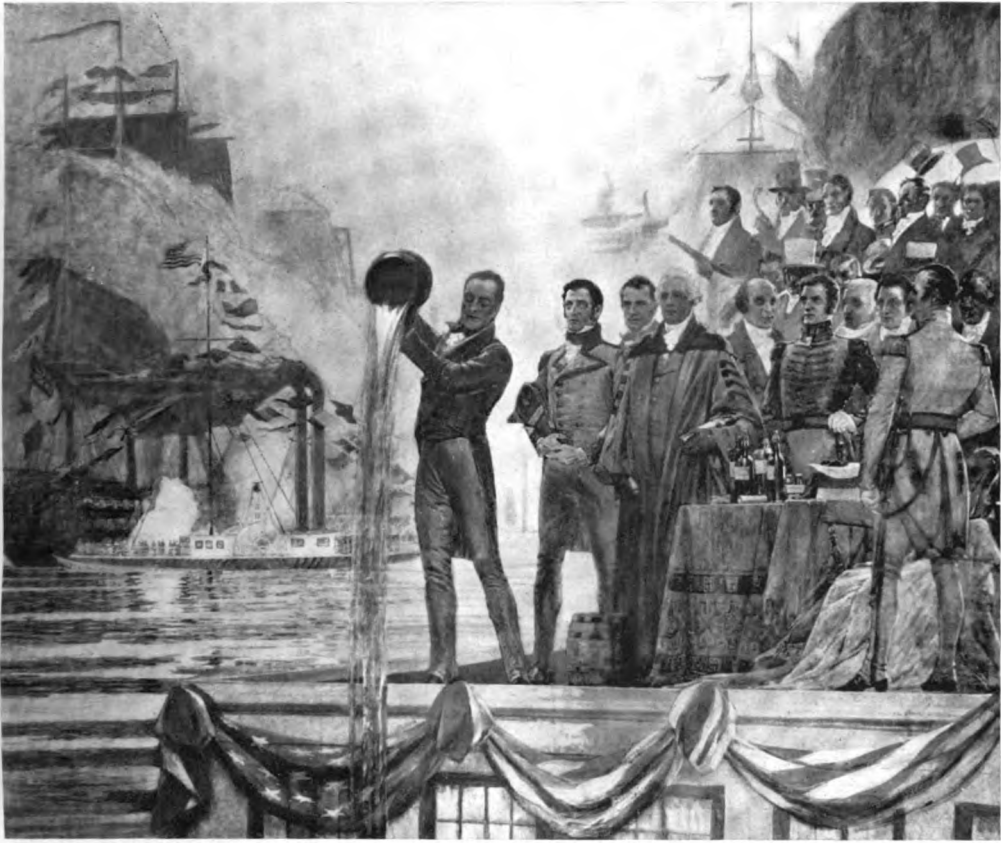
commissioners were enabled to purchase the rights of the company at the price fixed by the appraisers in the condemnation proceeding, namely, \$91,616, thus putting an end to the company and vesting its properties in the State.

While the work was progressing portions of the canal which were completed were opened to traffic. Thus the middle section was opened in 1820 and tolls were collected thereon in that year and each year thereafter until they were finally abolished in 1883.

In 1821 the Mohawk River was connected with the Erie Canal by a temporary lock so as to permit of navigation uninterruptedly from Schenectady to the Cayuga and Seneca Lakes. Among the principal engineering feats accomplished should be mentioned the aqueduct across the Genesee River and the deep rock cutting at Lockport, on the western section,

and the double crossing of the Mohawk River, by aqueducts, on the eastern section.

In 1822 it became necessary to determine the westerly terminus of the canal and a lively local controversy arose between the villages of Buffalo and Black Rock as to which should secure the prize. Lack of space forbids our entering into the details of this controversy, which is interesting, both on account of the arguments advanced and from a historical standpoint. It must suffice to say that the village of Buffalo was finally successful in persuading the Commission to locate the terminus at Buffalo Creek, at the mouth of which the village was situated. Events have proven that Black Rock has in no way suffered from this decision, as it now forms a part of the populous city into which the village of Buffalo has been developed, largely by the instrumentality of the canal.



From a mural painting in the DeWitt Clinton High School, New York

"THE MARRIAGE OF THE WATERS." GOVERNOR CLINTON, OF NEW YORK, POURING WATER FROM LAKE ERIE INTO THE SEA

In 1823 the eastern section of the canal was completed, and this was followed, two years later, by the completion of the western section. As has already been stated, the original estimate of the cost of the canal by the commissioners was about six millions of dollars. The actual cost proved to be slightly over seven millions, the discrepancy being accounted for by unforeseen difficulties in the prosecution of the work, some slight changes in the route and the fact that labor and materials were found to be more expensive than had been anticipated. But it is creditable to those under whose direction the work was carried on that there has never been a suspicion of improper application of the funds expended, or of waste or extravagance.

As the time approached when the work would be finished, extensive preparations were made for a celebration of the event.

October 26, 1825, was appointed as the date for the ceremonies. The Common Council of the City of New York took the matter in hand on behalf of that city, and every place of importance along the route prepared to participate in the celebration.

On the morning of October 26, a public demonstration of joy was made by the inhabitants of Buffalo upon the occasion of the departure of a fleet of boats which were to traverse the entire length of the canal and the Hudson to the City of New York. The fleet consisted of the *Seneca Chief*, the *Chief*, the *Superior*, the *Commodore Perry* and the *Buffalo*. DeWitt Clinton, at the time Governor of the State; the Lieutenant Governor, James Tallmadge, and committees from different villages and cities along the route, including New York and Buffalo, were on board.

At the moment of the commencement of the journey a cannon was fired at

Buffalo, giving the signal to a line of cannon within hearing distance of each other, extending the entire length of the canal and the Hudson, and the news of the opening of the canal was thus transmitted from Buffalo to New York in an hour and a half, and then returned to Buffalo in the same manner. Throughout the entire journey the arrival of the fleet at every principal place occasioned the greatest rejoicings; salutes were fired, fireworks displayed, speeches made and banquets and balls tendered to the officers and Committees. Upon arrival at Albany an entire day was devoted to the festivities appropriate to the occasion. The fleet then proceeded down the Hudson in tow of steamers to New York, where there took place a most elaborate celebration of the event.

Two kegs had been prepared containing water from Lake Erie, and these kegs were carried on the journey to New York. A naval procession was formed consisting of the fleet which had made the trip and a large number of other vessels appropriately decorated, and the whole proceeded to a point off Sandy Hook, where the vessels formed a circle. The Governor then proceeded to complete the ceremony of "commingling the waters of the lake with the ocean" by pouring the contents of one of the kegs into the sea. He then delivered the following short address:

"This solemnity, at this place, on the first arrival of vessels from Lake Erie, is intended to indicate and commemorate the navigable communication which has been accomplished between our Mediterranean Seas and the Atlantic Ocean, in about eight years, to the extent of more than four hundred and twenty-five miles, by the wisdom, public spirit, and energy of the people of the State of New York; and may the God of the Heavens and of the Earth smile most propitiously on this work, and render it subservient to the best interests of the human race."

Water from many of the most notable rivers of the different divisions of the world was then poured into the sea by Dr. Samuel L. Mitchell. The flotilla then returned to the City of New York, where a grand procession had been marching and

was assembled at the Battery to welcome it on its return. In the evening the city was brilliantly illuminated and a grand display of fireworks took place at the City Hall, accompanied by magnificent illumination of that building; on the following Monday a ball was given by the military companies of the city in honor of the event.

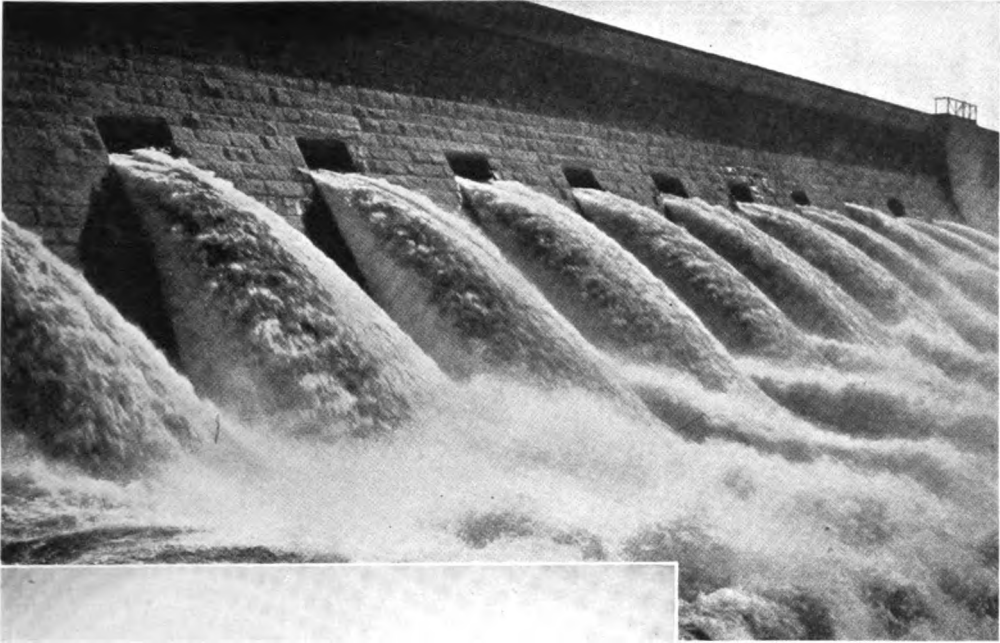
On the return to the western part of the State of those who had left their homes there to accompany the fleet to New York, a keg of water of the ocean was poured into the waters of Lake Erie with appropriate ceremonies, thus terminating the celebration.

Thus was concluded an enterprise which has proven of the greatest value to the State. For it is due to the Erie Canal that the course of commerce was diverted from the Canadian and southern routes so as to enrich this State and its citizens. And to the Erie Canal is due the extraordinary prosperity experienced not only by the State as a whole, but by the cities of Buffalo and New York in particular, for immediately upon its completion their commerce increased by leaps and bounds.

It remains for us to see how the canal was administered and improved during the years following its completion, with some discussion of the financial side of the question, until the larger policy was initiated which has resulted in the authorization of the barge canal now under construction. These administrative and economic questions, belonging, as they do, rather to the period of operation than that of construction, will be made the subject of the next paper.

NOTE—In preparing the foregoing paper the writer has made free use of "A Historical Review of Waterways and Canals in New York State," by Hon. Henry W. Hill; of the "History of the Canal System of the State of New York," by Noble C. Whitford, published in 1905 under authority of the State Engineer and Surveyor of the State of New York; of "Colden's Memoirs," published by direction of a committee of the Common Council of the City of New York on the occasion of the celebration of the completion of the Erie Canal; and of various other sources, and wishes to render acknowledgement of his indebtedness to them.

EDITOR'S NOTE:—The next installment of Mr. Clinton's "History of the Erie Canal" will appear in the May issue.



ASSOUAN AND THE SPHINX

No more powerful a contrast is to be afforded the world over than that now represented in storied Egypt by the great Sphinx of Gizeh, symbol of the most ancient civilization, and the mighty Assouan Dam, symbol of the most modern civilization. How must the all-seeing, ever-silent Sphinx regard the wonderful engineering work that has arrested the waters of the Nile just below the First Cataract—and that, in damming the river of glorious history, has totally submerged the magnificent ruin of the Temple of Philæ! Yet Philæ is but yesterday in the reckoning of the Sphinx. The drowning of exquisitely beautiful Philæ she may forgive. But the harnessing of the River of the Pharaohs?



THE TURKISH PORT OF STAMBOUL
OPPOSITE IS SEEN PERA, CONSTANTINOPLE

A MOST REPRESENTATIVE GATHERING;



FIRST ANNUAL BANQUET OF THE CHAMBER OF COMMERCE OF THE UNITED STATES
HELD IN WASHINGTON AND ATTENDED BY PROMINENT BUSINESS MEN FROM PRACTICALLY EVERY SECTION. MANY QUESTIONS
OF NATIONAL IMPORTANCE WERE DISCUSSED, AMONG WHICH WAS THE FLOOD MENACE OF THE LOWER MISSISSIPPI
VALLEY. MR. CALDWELL OF MEMPHIS IS BRIEFLY QUOTED BELOW

THE MISSISSIPPI DELTA

"Neglect by the United States Government of an area of alluvial territory in the lower Mississippi Valley, comprising 19,000,000 acres and almost equaling in its extent the combined area of the States of Massachusetts, Connecticut and New Jersey, has not only caused a wanton sacrifice of human life, but has rendered unproductive, or uncertain of production, the richest soil of the Republic." In these words, A. S. Caldwell, a prominent business man of Memphis, appealed for national aid in the conservation of the unlimited resources of the Mississippi bottom lands, in a speech delivered before the first annual meeting of the Chamber of Commerce of the United States, held recently in Washington. The notable group addressed by Mr. Caldwell appears in the above photograph.

"Did Congress hesitate to expend nearly \$200,000,000 and several thousand American lives to take Cuba from Spain, and give it—not to us, but to somebody else?" Mr. Caldwell asked. The Delta needs only a fraction of this sum.



A. S. CALDWELL
PROMINENT MEMPHIS MAN MAKES A VIGOROUS APPEAL FOR
FLOOD PREVENTION IN THE MISSISSIPPI VALLEY
AND ASKS SEVERAL PERTINENT QUESTIONS
QUOTED ON THIS PAGE

MODERN SCIENCE MAKES A TRY FOR



Boston Photo News

THE SALVAGE SHIP LYONS

EMPLOYED TO SECURE THE MILLIONS FROM THE SUNKEN TREASURE SHIP "LA LUTINE" OFF THE COAST OF HOLLAND. (NOTE THE USE OF POWERFUL HYDRAULIC MACHINERY)

SUNKEN treasure is a magic phrase that kindles the imagination and stirs the blood of everyone who has a tinge of romance in his makeup. Even hard-headed business men, always careful of a penny, find an appeal in such schemes, that lures them on to put in their money to finance the search for the treasure.

Such practical business men are behind the National Salvage Association, which is conducting the enterprise of salving the \$6,000,000 sunk with the old frigate *La Lutine* in 1799 off the coast of Holland. So far the expedition has recovered a variety of silver coins, cannon, cannonballs, grape shot and an anchor, but no great amount of actual treasure. Since the *Lutine* went down in a gale off the entrance to the Zuyder Zee with all but two of her three hundred souls aboard, after she struck on the coast between the islands of Vlieland and Terschelling, some \$500,000 has been recovered. Some of this was obtained by earlier expeditions, some by independent divers and some by being washed up on the shore, or brought up by dredges.

The present expedition, which has been working since the summer of 1911, is the most perfectly equipped of any treasure-hunt in history. The salvage steamer *Lyons* is equipped with powerful pumps,

which bring up the mud and sand in great streams, to be dropped onto a huge sieve or screen built over the stern. An auxiliary boat is used to lighter any heavy articles brought to the surface. A corps of divers is also kept at work.

At the end of the eighteenth century, Hamburg awoke to find itself the principal commercial port of northern Europe. All Europe had shown tremendous commercial development. The war between England and France caused delays on payments in commercial transactions, and these caused the failure of many German merchants.

To make things easier, English merchandise sold to Germany was paid for by bills of exchange made payable some months later, to enable the Germans to sell the goods and collect the money before it came due. However, the rate of exchange ran as high as 30 per cent., a rate which was prohibitive. To relieve the strain, a group of wealthy English bankers determined to send bullion and specie into Hamburg, to enable their representatives to handle their own payments on the spot and thus avoid the ruinous exchange rate.

The British Admiralty was appealed to for a naval vessel to convoy the packet it was proposed to send with the shipment. Other bankers outside of the group heard

MILLIONS IN SUNKEN TREASURE SHIP

of the plan and asked also for a chance to ship gold and silver. So many applied that it was decided to send a fighting ship, and so the *Lutine*, a 32-gun frigate captured from France, was detailed.

So secretly was everything conducted that it is not known to this day how the treasure was conveyed to Yarmouth, nor is it known exactly how much treasure in bullion bars and coin was shipped on the *Lutine*. From bars already recovered by salvors, however, it is believed that no less than nineteen banking houses were represented, and it is also believed that the English government sent \$700,000 in coin to pay off the troops campaigning against France.

La Lutine sailed from Yarmouth on November 9, 1799, and that same night she went ashore on the Dutch coast. The only two survivors were unable to tell anything of the disaster. One died a few hours later and the other became insane from the exposure and hardships he endured.

In 1800 the King of Holland authorized an official expedition to attempt the salvage and with the crude facilities then available, about \$278,000 was recovered. Then the wreck settled and no further attempts were made for thirteen years, when, in 1814, Peter Tsachauzier, official receiver of wrecks at Terschelling, made another attempt, obtaining only a few small coins. But he formed a company with a royal Dutch charter, which is still legally in existence, known as the Decretal Salvors. They spent about \$25,000 in seven years of fruitless attempts.

Finally the British underwriters were aroused, and, in 1821, the King of Holland made over to King George IV by royal decree all his claimed rights in the *Lutine* and her cargo. King George immediately conveyed the title to the Lloyds' committee. They authorized the Decretal Salvors to work on the wreck for their mutual benefit. But few results were obtained in the various attempts made, until 1858, when divers sent up a total of \$140,000 worth of bullion in slabs. Then the sand buried the vessel again, and little could be done. Up to 1860, by various attempts, \$220,000 in bullion was added to the amounts theretofore obtained.



Boston Photo News

READY FOR DAVY JONES' LOCKER

Then up to 1889 spasmodic attempts made brought up a total of 11,164 coins, valued at \$4,600.

The present National Salvage Association has gone at the work in the most up-to-date manner, with powerful apparatus. They are attacking the wreck on the theory that the greatest amount of the treasure as yet unrecovered is within the wreck and not outside, as heretofore has been supposed. They believe the greater part of the treasure is at the bottom of the wreck, underneath the heavy cannon which crashed down through when the vessel broke her back on the rocks. On the other hand, divers who had been down and recovered bullion on previous expeditions declared that a space twelve feet square was literally paved with silver bars that were wedged so tightly together that they could not be moved with crow-bars or fingers. This treasure was at the stern of the vessel, outside the hull. So it is a debatable question whether or not the present expedition will be more successful, proceeding along its mapped out plan, than its predecessors.

VIEWS & REVIEWS

IN the course of a notable address delivered before the Railway Business Association of New York City the following words were used by Mr. James J. Hill:

"The railroads of this country are on a brink. It won't take much to send them over; nor to pull them back. Because they are threatened, the whole country is threatened. Commerce, manufacturing, agriculture, the individual welfare of every worker, is menaced—menaced by this strangest of railroad situations. For unless the facilities and terminals of our railroads are increased the congestion, ever growing, which often paralyzes traffic to-day will result in industrial chaos. * * * * *

The demand for transportation is growing apace. It is keeping step with the growth of population and production. In the Pittsburgh district, for example, railroad tonnage grew from 64,000,000 to 152,000,000 in the ten years between 1901 and 1911 * * * * *. From 1909 to 1910 our freight ton mileage grew eleven times as fast as our trackage. It grew five times as fast as our equipment. And the rate is increasing every day. With our recent year of large crops and added tonnage it will be still greater.

"Now if a manufacturer were confronted with such conditions he would have to do one of two things—refuse business or double his plant. Railroads cannot refuse business. In the first place it is not legal to do so. In the second place it would mean national panic and individual ruin. So the only course is for the railroads to enlarge their plants. This means spending billions of dollars. Even existing plants cannot be worked to their limit unless the size of our terminals is increased.

"And that is the railroad situation to-day. The question is vital to capital and to every workingman in the country. It is the immediate concern of every large city. Cities cannot grow, cannot escape decline, unless the movement of business is kept free. If the commerce naturally tributary to a certain city is handicapped by poor terminals or if burdened with too heavy charges that have come from the excessive cost of enlargement, that commerce will go elsewhere. * * * * *

"Yes, our greatest menace is the crippling congestion. Water routes cannot relieve it. In the first place, the largest streams of traffic in the United States are not in the direction where waterways can be used. In the second place, a waterway less than twenty feet deep cannot compete. So the only solution of our railroad problems is to enlarge the terminals, and that is a question of money—a vital question for the railroads to-day."

Mr. Hill's address reveals his broad, statesmanlike knowledge of the fundamental importance of the transportation problem, his recognition of the fact that the crux of the situation lies in the imperative necessity and the tremendous difficulty of securing greatly increased terminal facilities, and the surprising narrowness of his conception of the role which is to be played by waterways in handling the ever-growing volume of traffic in the United States.

WHILE he meant it to be just the opposite. Mr. Hill's address was really one of the strongest waterway arguments which has been presented for many a day. It is true that the profits of capital, the wages of labor, the development of natural resources, commerce, industry, civilization itself are all dependent upon transportation. It is true that the greatest need of the railroad is, not trackage or rolling stock, but terminals, and it is emphatically true that it is an impossibility for the railroads of the United States to procure the multiplied billions of dollars which would be required to provide and equip terminals which could promptly and efficiently handle all the traffic that the country can produce.

What, then, is to be done? Must the progress of the country be forever clogged and hindered by dependence upon a one-sided transportation system which habitually breaks down under the pressure of prosperity? Mr. Hill himself supplied the answer in an address delivered before the National Rivers and Harbors Congress in 1907, when he said:

"In seeking ampler ways for traffic the country turns to its waterways for relief. These are about to emerge into an era of restored usefulness and influence in development of our resources. The age of pioneering relied upon them alone. The age of settlement sought speedier and more universal means of communication. The age of maturity must press all the available agencies of transportation into service. The enthusiasm that built the Erie Canal must be aroused in this generation for a systematic and scientific improvement of all our waterways."

The "systematic and scientific improvement of all our waterways" is a tremendous task, but it is one from which the Nation that has built the Panama Canal has no need to shrink, for the engineering difficulties are not as great as those which have been successfully solved upon the Isthmus, and our national credit is so high that all the funds needed can be easily procured, and at rates of interest far less than those the railroads have to pay.

When he says that the largest streams of traffic in the United States are not in the direction where waterways can be used, Mr. Hill forgets or ignores the new barge canal on which the State of New York is spending nearly \$130,000,000. This, when opened to traffic a year or two hence, will give an open waterway from Chicago and Duluth to tidewater at New York City, and one which lies exactly in line with the largest streams of traffic in the United States.

While it is true now, and will doubtless continue to be true for many years to come, that the greatest volume of traffic moves on East and West lines, it must not be forgotten that with the opening of the Panama Canal other great streams of traffic will begin to move on North and South lines. And it is also worthy of note that there were times in 1906-07 when goods could have been sent down the river from St. Paul to New Orleans and then shipped to the other side of the world in less time than it took to send them five hundred miles by rail. The time within which a shipment of goods can be delivered is quite as important as the route or the distance over which it travels to reach its destination.

MR. HILL'S opinions are always worthy of attention, but when they come into conflict with facts the facts must be given the right of way. Here is a fact that runs counter to his often-expressed opinion that no waterway less than twenty feet deep can compete with a railway. At Hannibal, Missouri, is a great cement plant, the management of which decided to ship to New Orleans by water. They tried to get some steel barges, but, as delivery could not be guaranteed for nearly a year—doesn't that look as if somebody, or several somebodies, are buying barges for use upon our rivers?—they bought five Ohio River wooden barges which carry 800 tons each and draw seven feet of water. Last fall the water got so low that the barges could not reach Hannibal and it was necessary to ship the cement to St. Louis by rail and then transfer it to the river. The shipment was made over the Burlington road, which, by the way, is a Hill property, and the freight amounted to \$3000, which is more than the cost of sending the 4,000 tons of cement to New Orleans by river and bringing the barges back to Hannibal, up stream. That is, it cost more than twenty times as much to ship 120 miles by rail as for a round trip of 2400 miles by river—in barges drawing only seven feet.

UNTIL very recently the advocates of waterways have, rightly enough, laid the emphasis almost entirely on the demand that our rivers and harbors should be given ample and dependable channels. But the time has now come when, without lessening in the least the insistence upon the continuation of work upon the channels, the vital importance of waterway terminals must be continually emphasized and reiterated. For a waterway without terminals can no more be an efficient agency of transportation than could a railroad in the same condition.

Three things are essential if the expenditures already made, and those yet to be made, upon our waterways are to be justified by the results. First, every port, whether ocean or inland, must be provided with terminals ample in area and adequate in equipment for the prompt and efficient handling of the traffic offered. Methods of loading and unloading which were already ancient when Noah built the ark must be discarded for those which are up-to-date.

Second, these terminals must be publicly owned and operated for the public benefit; or in any event must be so controlled that they will be open to all users on equal and reasonable terms. It may be necessary to secure the passage of laws giving state or municipal authorities the right to condemn any property needed for use as waterway terminals.

Third, complete coordination and cooperation must be secured between carriers by water and carriers by rail.

HAILED by its friends as a source of untold benefits to all the people and assailed by its enemies as certain to produce a staggering deficit in postal revenues and bring dire disaster upon country merchants, a United States Parcel Post went into operation at the moment the year 1913 began. It is too soon to be sure whether the prophecies of good or the forebodings of evil will be realized, but it has already been proven beyond all doubt that the people are ready to make use of the facilities of the new postal service.

Facts

vs.

Opinions

Water

Terminals

Necessary

*The Parcel
Post*

Based upon actual returns from fifty cities, which usually do one-half the postal business of the country, it is estimated that there were nearly 40,000,000 packages handled by the U. S. Parcel Post in the first month of its operation. Chicago leads all other cities in the number of parcels handled with a total of 4,168,133, and following in order are New York, with 3,519,788; Boston, 1,151,408; Philadelphia, 1,035,000; St. Louis, 917,809; Cleveland, 879,768; Brooklyn, 834,381; Detroit, 510,072; Cincinnati, 412,381, and Kansas City, 357,102.

Postmasters throughout the country report a larger number of parcels handled during the latter half of the month and prophesy a steady increase in the utilization of the new service. That this result is probable is indicated by the experience of Great Britain, where the inland parcel post was inaugurated August 1, 1883. For the year ending March 31, 1885, the number of parcels handled was 22,910,040. Ten years later the total was 57,136,000 and by 1905 had grown to 97,231,000—the increase being 6,000,000 greater in the second ten-year period than in the first. This was due largely to the fact that the rates were lowered while at the same time the weight limit was increased.

The zone system used in the United States is criticised by some as a joker inserted for the benefit of the express companies, and praised by others as the one thing which will save the country merchants from being overwhelmed by the mail order houses. In most of the countries of Europe the weight limit is higher than it is here—in Belgium it is 132 pounds—the rates are lower and the charge, like that for letter postage, is the same without reference to distance. Even under these far more unfavorable conditions the small merchant has not been crushed out of existence and it seems hardly likely, therefore, that he will disappear from the commercial life of the United States. A recent canvass of the newspapers of Australia and New Zealand, where it has been in operation for some time, showed the unanimous opinion that the parcel post is a net benefit, and only a very few of them believed that the catalogue houses have gained any advantage over the country merchants because of it.

Near the close of his long life the great commoner, William E. Gladstone, said:

"The post-office savings bank and the parcel post are the most important institutions which have been created in the last fifty years for the welfare of the people. I consider the act which called these institutions into existence the most useful and fruitful of my long career."

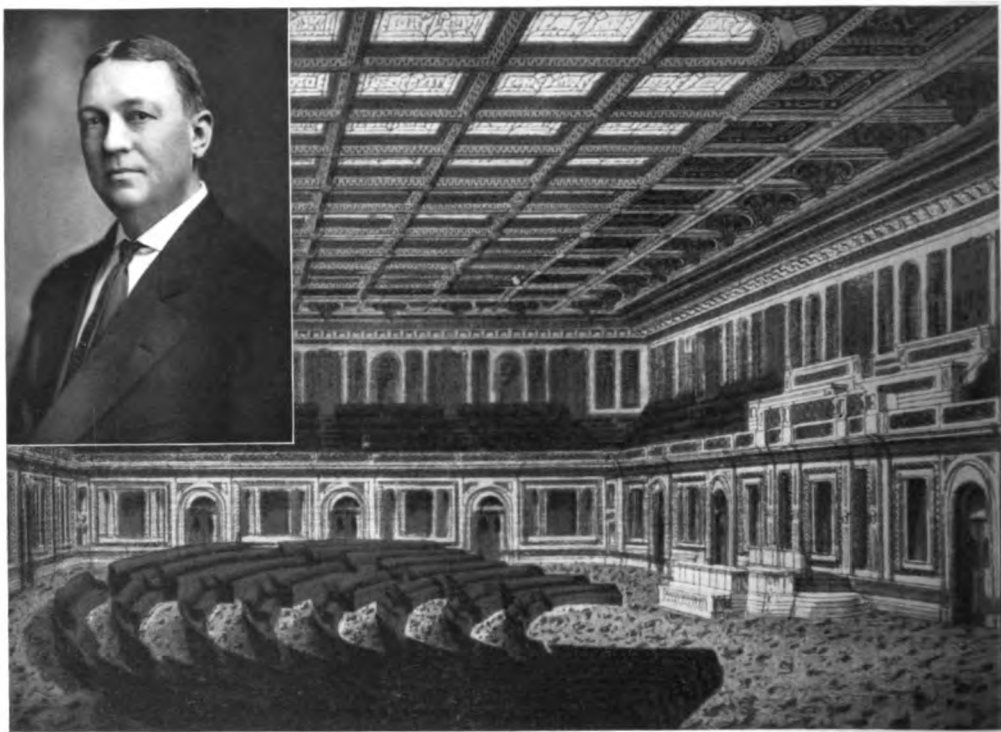
It may well be that future historians will point to the establishment of the same institutions in the United States as the crowning achievement of President Taft's administration.

IN the death of Hon. Henry T. Clarke, on February 2, 1913, there passed away an enthusiast on waterways in general and the Missouri River in particular. He was a Vice-President of the National Rivers and Harbor Congress from its reorganization in January, 1906, until December, 1912. Born April 26, 1834, he went in early manhood to Nebraska, settling first at Bellevue. Later he removed to Omaha, where he was in business for many years, and where he resided until his death.

S. A. THOMPSON.

IN AND ABOUT WASHINGTON

By EDGAR C. SNYDER



ELLIOTT WOODS, SUPERINTENDENT OF CAPITOL. CHAMBER OF HOUSE OF REPRESENTATIVES IN THE YEAR 1860.
NOTE LUXURIOUS PLUSH SOFAS

BENCHES, yes plain b-e-n-c-h-e-s, for the Hall of the House of Representatives, "m' Lords and Gentlemen:" and the change is to be made between the final adjournment of the Sixty-second Congress and the beginning of the first, or extraordinary, session of the Sixty-third Congress, which is scheduled to happen on April 1.

And yet benches in the House of Representatives are by no means new, for away back yonder, just before the clash of contending armies reverberated around the world and the titanic struggle between the North and the South was on, the solons in the lower body of the National Congress in the days of '59 and '60 sat upon benches, or sofas, upholstered in bright red, which harmonized with the large panels on the lower walls of the hall. And the carpet was bright red, too, with

a conventional floral design, the crimson of sofas, floor and walls being prophetic of the blood that would be spilled in the greatest internecine war in all history.

Now after more than half a century has rolled over the United States and the Nation has grown from thirty-one millions, in 1860, to ninety-three millions, in 1913, the demand for additional seating capacity in the historic chamber, caused by the increase of the House to 435 members, has made the return to benches absolutely necessary. And thus once again "we see ourselves reflected in our fathers."

But the benches of the House in the Sixty-third Congress will be a far cry from the sofas in the War Congress, when Buchanan was in the White House. They will be cane-seated, with leather upholstered backs and arranged in segments of circles, sixty-six benches in all, with a

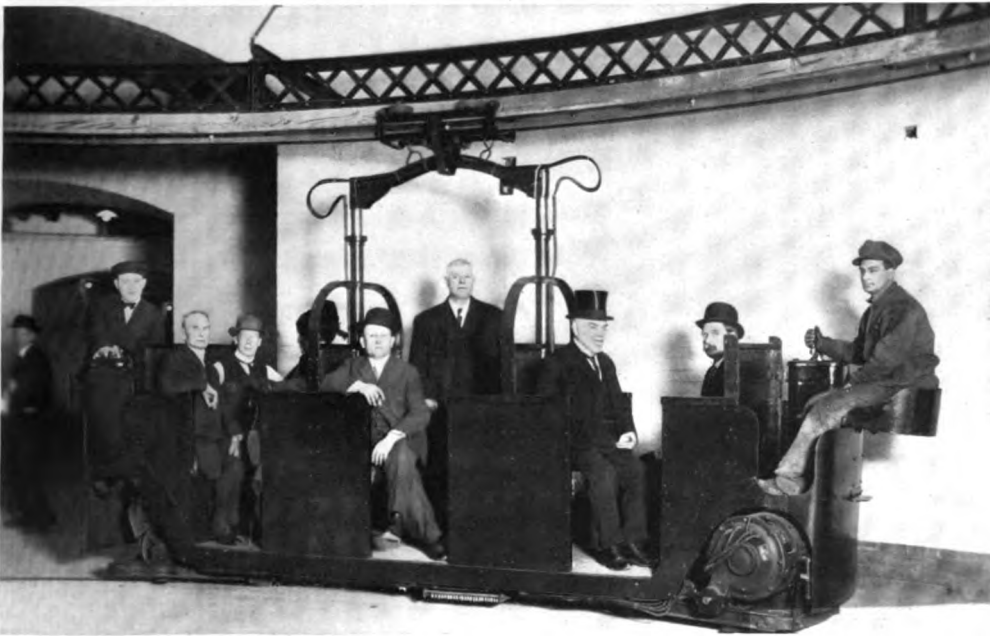
total capacity of 456 seats to take care of the normal increase in the House representation, by reason of increase in population. These benches will be equipped with racks and push-buttons, the need for desks with capacious space for books, writing materials, etc., having passed away when the magnificent office-building set apart for the use of members of the House was completed.

And the man upon whom will devolve the duty and responsibility of making the change in the seating arrangement of the

secured him a position in the office of the then Architect of the Capitol, Edward Clark, whom he succeed in office.

Elliott Woods, while essentially a self-made man, has many talents. He plays the violin and piano and has to his credit three or four operas for which he has written the scores. He has one of the best equipped laboratories in the country and is regarded as an authority on wireless telegraphy, as he is on photography and related subjects.

He installed the automobile service in



THE NEW MONO-RAIL SUBWAY CAR UNDER THE CAPITOL. SENATOR O'GORMAN, OF NEW YORK, IN HIGH HAT

House is the Superintendent of the Capitol, Elliott Woods, who has been doing big things ever since his appointment to this most important position.

Twenty-eight years ago Elliott Woods was a wood-carver in Indianapolis, as had been his father before him. He came to Washington with Thomas A. Hendricks, then Vice-President of the United States. Mr. Hendricks did not know what to do with the young man, who had powerful and influential friends in the home town. The Vice-President had planned to find young Woods a place in the mechanical department of the Treasury, but as there was no immediate opening, Mr. Hendricks

the subway between the Capitol and the Senate Office Building, suggesting the design for the vehicle which has carried thousands of persons to and from the great white building. Now that the auto-car has outlived its usefulness, under the direction of Mr. Woods a monorail system of transportation is almost ready for operation, which, it is believed, will meet all requirements for speed, comfort and safety.

Although Elliott Woods is the busiest man about the Capitol, having four distinct offices to look after, he still finds time to indulge his artistic taste with music or musical composition. He is a many-sided, gifted man.



LEADERS OF BIG WOMAN SUFFRAGIST PAGEANT
MRS. GLENN S. TINNIN (LEFT) AND MISS HAZEL MACKAYE (RIGHT)

"Votes for Women!" "Votes for Women!" How the capital of this great Republic will ring with the battle-cry of the suffragists on the day preceding the inauguration of Wilson and Marshall, for the City by the Potomac is to be the scene of

the greatest demonstration yet made for Equal Suffrage, and the women back of the movement say that the Pageant-Procession will go down into history as the crowning achievement of their fight for the "Cause."

Mrs. Glenna Smith Tinnin, the originator and designer of the Pageant-Procession, says:

"The pageant is unequalled as a means of giving a vivid and lasting impression of the subject it is intended to illustrate. In our woman's Pageant-Procession we can at once present an argument and tell a story; we can visualize history—and we can do this with such truth and vividness as must impress the most indifferent onlooker, who would be unmoved by any logic of argument or magic of eloquence. We feel that this 'new crusade' of our Pageant-Procession, like those splendid religious processions of the Middle Ages, will have the power to convert, to encourage, and to inspire."

The story sought to be portrayed by the procession, which will be led by the dashing and extremely handsome Miss Inez Milholland, of New York, as the Herald, will show the *actualities* of much that woman has struggled and is still



struggling to achieve, as well as what she has so far attained, while in the ceremonies at the Treasury Building will be symbolized those *ideals* towards which a whole humanity—man and woman—has been painfully struggling through untold ages.

And it is to this end that Mrs. Glenna Smith Tinnin of Washington and Miss Hazel MacKaye, of Cambridge, Mass., a sister of Percy MacKaye, the dramatist, are working together to make the pageant a significant and harmonious whole.

Miss Milholland is the subject of the first portrait on the left; Miss Katherine Hurst, in farmer's costume of brown, and Miss Edna Stahl, in page's costume of blue, appear in the second portrait and again in the third. Posed as Charity, in the fourth, is Mrs. Otis Skinner, the wife of the eminent actor. In the fifth, Miss Florence Fleming Noyes, the classic dancer, is pictured as Liberty. Mrs. Moore and Mrs. Owens, the wives, respectively, of Commodore Moore and Commander Owens, are costumed as farmers in the sixth. Justice, in the seventh, shows Miss Flora Wilson, daughter of the Secretary of Agriculture. Mrs. Marie Jenney Howe is pictured in the last portrait.

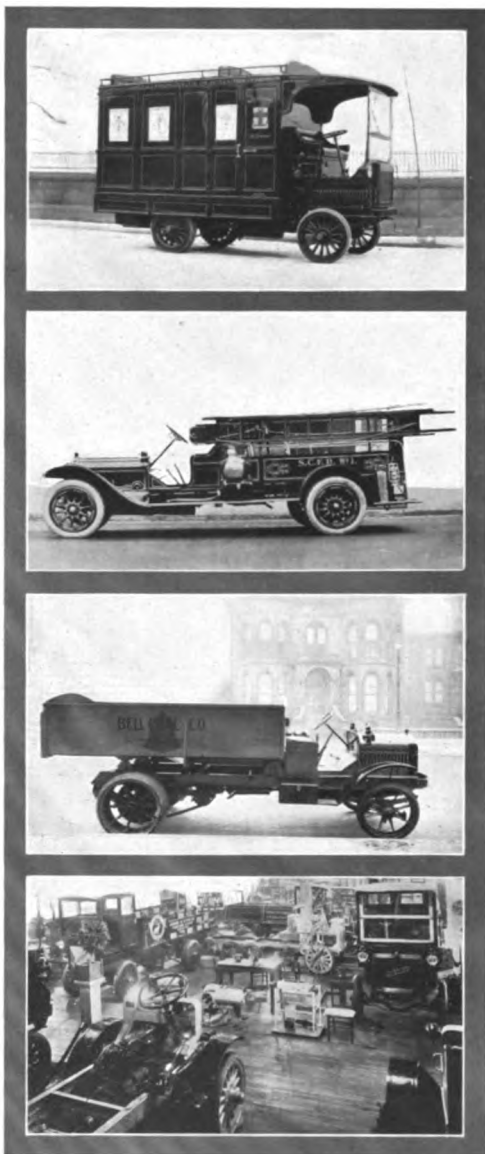


CONQUERORS OF THE FROZEN NORTH AND SOUTH. THE ONE ON THE LEFT IS ADMIRAL PEARY, WHO PLACED THE AMERICAN FLAG ON THE "TOP OF THE EARTH;" THE OTHER, CAPTAIN AMMUNDSEN, WHO WON FOR NORWAY THE CONQUEST OF THE SOUTH POLE

This historic event took place recently when Captain Ammudsen came to Washington to lecture before the National Geographic Society, and at a gala banquet received from the hands of his co-laborer in polar snows the Society's gold medal, the highest honor which that organization bestows upon those who have accomplished big brave things, who have done heroic deeds.



TRUCK WEEK CHICAGO AUTO SHOW



DISTINCTIVE TYPES

IN THE ORDER SHOWN: 1. AUTOMOBILE CHURCH, DESIGNED FOR THE USE OF THE CATHOLIC CHURCH EXTENSION SOCIETY IN SPREADING THE GOSPEL TO THE REMOTEST PARTS OF MEXICO AND SOUTH AMERICA.

2. HOSE WAGON WITH AUXILIARY FIRE APPARATUS. THIS MODEL IS OF EXQUISITE DESIGN AND IS CAPABLE OF A MILE-A-MINUTE SPEED.

3. FIVE-TON COAL-CARRYING TRUCK. DUMPS BY ITS OWN POWER.

4. VIEW OF CHICAGO COLISEUM DURING TRUCK WEEK. VALUE OF VEHICLES SHOWN ABOUT \$1,000,000.

IT IS ESTIMATED THAT THE ACTUAL SALES DURING THE WEEK TOTALED THE HANDSOME FIGURE OF \$500,000.

NOT wholly for the uses of modern commerce are the wonderfully varied types of commercial vehicles which were exhibited at the Thirteenth Annual Automobile Show, held in the monster Coliseum at Chicago during the week of February 10. While every conceivable sort of motor-driven wagon, truck and merchandise-carrying car was represented in the collection that aggregated in value hundreds of thousands of dollars, down to the newest type of auto dump-cart, a new departure in motor-transportation was shown in a beautifully appointed chapel auto, which will be employed by the Catholic Church Extension Society in the spread of the Gospel to the remotest parts of Mexico and South America. The chapel proper is confined to the rear of the car, while the priest's quarters and driver's compartments are forward. In a remarkably compact, but comfortable, "vestry," is a kitchenette outfit and cot, together with a desk and typewriter. A series of wardrobes separates the driver's compartment from the rest of the extraordinary equipage.

Horse-drawn fire apparatus is as obsolete as a single-cylinder-engine pleasure car. At the Chicago show a number of types of fire wagons were shown, among them being the White, Federal, Kissel, Pope-Hartford and Harder. All are capable of attaining very high speed and this is facilitated by the use of pneumatic tires. Under ordinary conditions a heavy vehicle would be equipped with solid or cushion tires, but these do not permit of fast operation. The reason these combination wagons—and they are called combination because they carry chemical tanks and water hose—are made to attain a high speed, is because they are expected to be the first on the scene of the conflagration.

In all, seventy-six manufacturers displayed their wares. The cars, which numbered approximately two hundred, occupied the lower floors of the Coliseum and the First Regiment Armory, adjoining. Upon the balconies were displayed commercial car accessories, and the most striking feature of the accessory exhibit was the increased number of steel wheels.

LAST WORD IN MOTOR VEHICLES

TARANTOUS This type has many advantages over the wooden type and a fair prediction would be that the wooden truck wheel will have outlived its usefulness in 1915. One reason for this is the present scarcity of the proper material for the wooden wheels.

A very interesting subject for the spectators was the study of the various body styles. Particularly interesting was the display of tractors and public service cars. The former was exhibited by the Knox Automobile Company, in a number of forms. Tractors are commonly referred to as road locomotives, because of the fact that to them may be attached any form of trailer. These are usually in the form of an ordinary horse truck with the forward wheels removed. An oil tank attached to the three-wheeled tractor was shown by the Knox Company. A performance by a tractor is interesting in that it has the ability to turn completely around within a radius of perhaps fourteen or fifteen feet, a feat which cannot be accomplished by the ordinary form of commercial car.

In dump-car design many noteworthy features have been brought out, principally in the form of automatically unloaded and quick-detachable bodies. A truck arrives at a warehouse, where the body and load are removed as a unit, and an empty body substituted, the entire operation consuming six minutes.

There is no longer the necessity of inquiring as to the time required to negotiate a certain distance and how much time has been spent in loading or unloading the vehicle. A machine tells the modern owner just exactly when his motor truck stopped, how long it stopped and if the motor was still in operation.

The driver of the modern commercial car is not called upon to use any mechanical skill in the operation of his car. The early types were mechanically complicated and required much care, which the ordinary converted horse-vehicle driver could not give. His usual grievance was magneto trouble, but that instrument has been perfected to such an extent that it is now possible to operate one for a full year without attention.



DISTINCTIVE TYPES

IN THE ORDER SHOWN: 1. AUTOMATIC DUMP BODY IN ACTION. PERMITS OF VERY RAPID DISCHARGE OF LOAD.

2. AN EXHIBIT OF THE WHITE AUTO COMPANY, CONSIDERED BY MANY THE MOST BEAUTIFUL VEHICLE SHOWN. ONE SCHOOL GIRL REMARKED: "I AM JUST DYING TO RIDE IN THAT CUTE HEARSE."

3. THIS PEERLESS MODEL INSURES COMFORT TO DRIVER AND PROTECTION TO CARGO. THE CURTAINS ARE READILY REMOVED FOR UNLOADING AND WHEN THE WEATHER RENDERS THEM UNNECESSARY.

4. ALCO THREE-TON-TRUCK WITH STAKE BODY EXEMPLIFIES MUCH OF THE BEST SKILL OF THE AUTO TRUCK ENGINEER.

THE BOSTON MOTOR BOAT SHOW



© Levick, New York,
1912

"BABY RELIANCE II" WAS THE PET OF THE SHOW. THIS DOUGHTY LITTLE CRAFT WAS THIS COUNTRY'S CUP DEFENDER DURING THE SEASON 1912. SHE IS OWNED BY J. S. BLACKTON, POWERED BY AN EIGHT CYLINDER 150 HORSEPOWER STERLING ENGINE AND AVERAGED 47.37 MILES PER HOUR OVER A FIVE-MILE COURSE

THE Boston Motor Boat Show held in Mechanics Hall, February 1st to 8th, inclusive, proved to be as interesting as ever to the thousands who attended.

If the motors, boats and accessories exhibited by the various manufacturers is any criterion to judge by, popular favor runs strongly this year to the medium-sized runabout and small open boat with motors not materially different from last year, but refined in many ways.

Most of the motors exhibited have been tried and found too good to warrant any radical changes so that the manufacturers have devoted their energies to improvements such as a dual ignition system, each cylinder having two separate spark plugs, water-proof plugs, compressed air or electric self-starter attachments which do away with cranking and such other small but important points as heated air intake pipes to the carbureter. All these points are what men who handle their own boats have found to be the only weak points in the older equipments. Most of the two-cycle motors are now built on the three-port system and the equal number of both two- and four-cycle motors show that each system has its advocates.

There are motors ranging in power from the huge 120 horsepower machine to the tiny detachable $1\frac{1}{2}$ horsepower motor that could be carried in a grip and attached to the stern of any rowboat.

The largest size boat shown this year

was thirty-five feet. There were several of this size almost too handsome in their piano-like polish to be put in the water. There were all open runabouts with motors under hinged hatches in the after end of their forward deck and all had the complete dashboard control, very similar to an up-to-date automobile even to the foot-pedal control of the clutch. Auto tops were fitted to all of these, the old style of boat awning top being conspicuous by its absence. Electric side lights, bow lights, bulkhead and engine-room trouble finders were installed in some of the handsomely equipped craft. Hydroplanes were very much in evidence.

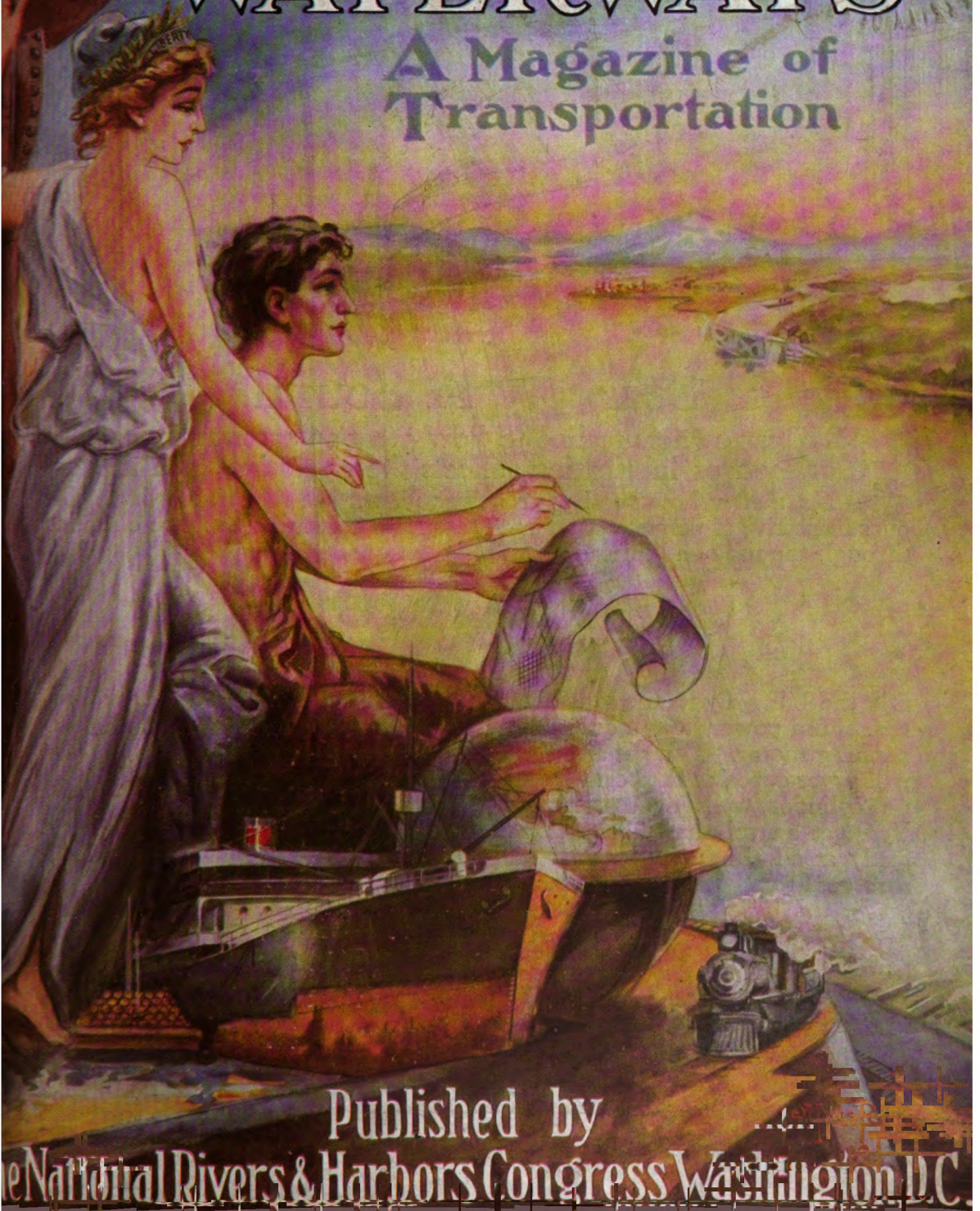
There were cheap little hydros sixteen feet long and elaborate polished mahogany ones ten feet longer, but the little pot-leaded squat-hulled Baby Reliance II that created such a furore last summer shared attention with them all. V-bottom boats, as skip-jacks are now called, were exhibited in several sizes.

In the open well space in the back end of the hall, an up-to-date racing sail boat stood, her sails sticking clear up above the balcony where, in the center of many accessory exhibits, the ladies' band played popular airs.

It was up in this gallery near a boat hardware exhibit where Capt. Thomas F. Day, in the afternoons, gave interesting lectures about the trip of the motor boat *Detroit* from Detroit to St. Petersburg, Russia.

NATIONAL WATERWAYS

A Magazine of
Transportation



Published by

the National Rivers & Harbors Congress Washington D.C.



Scarcely A Sound

FEW car owners realize to how great an extent lubrication, or lack of lubrication, affects the operation of a motor. No matter how good your power plant, that soft, almost inaudible purr indicative of perfect action and maximum power may only be obtained through the use of a lubricant of the highest quality.

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Test these statements for yourself. You can obtain Texaco Motor Oil at most good garages and supply shops. Sold in 1 and 5 gallon cans.



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VOL. 1

No. 3

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*



ONE OF THE CARNEGIE STEEL MILLS

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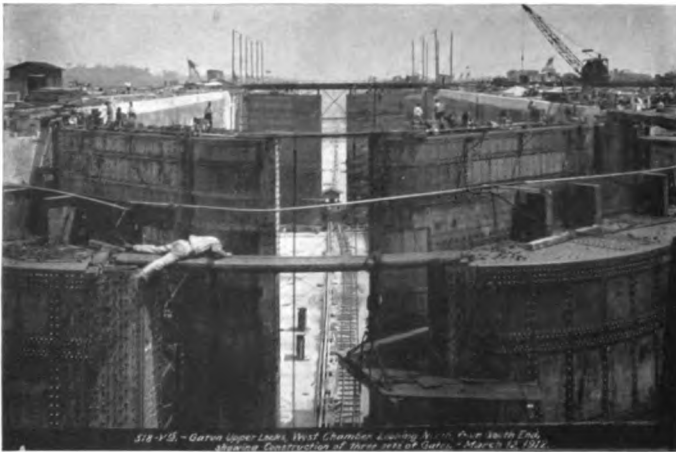
JOS. E. RANDELL, *PRESIDENT*

S. A. THOMPSON, *SEC'Y AND TREAS.*

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THE CITY OF PITTSBURGH AND HER TWIN WATERWAYS

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NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I

MAY, 1913

NUMBER 3

PITTSBURGH FROM A NEW ANGLE

By HARRY CHAPIN PLUMMER

*"LONG has Pittsburgh sustained the soubriquet of 'the Smoky City,' but Science and Government are co-operating to forever dispel this murky influence. * * * * * There is every indication that when the skies above Pittsburgh shall have cleared for all time, a city of wondrous natural and artistic grace will be revealed, a city whose crowding multitude of attractions will cause the world to exclaim that she had not lived and striven in vain within her veil of smoke."*

A BLAZE with light, the light of myriads of incandescents, is Pittsburgh by night. The restless, nervous activity which characterizes the life of this most wonderful city, this city of dream impressions, by day, continuing into the darkest and, elsewhere, the quietest, hours of the night, demands its own peculiar magic setting of light. Ever so slight is the diminution of this human activity, this dynamic energy, as the night wears on and dawn first flushes the eastern sky.

Some little time before the approach of Easter morn mighty Pittsburgh stood proudly reflecting her nocturnal splendor. Masses of lowering clouds by turns revealed, veiled and hid the moon, just on the wane, and this elusive light lent an individual halo to familiar objects along the waterside stretches of the city, to the Monongahela River, "deep and still, without any perceptible flow," to the succes-

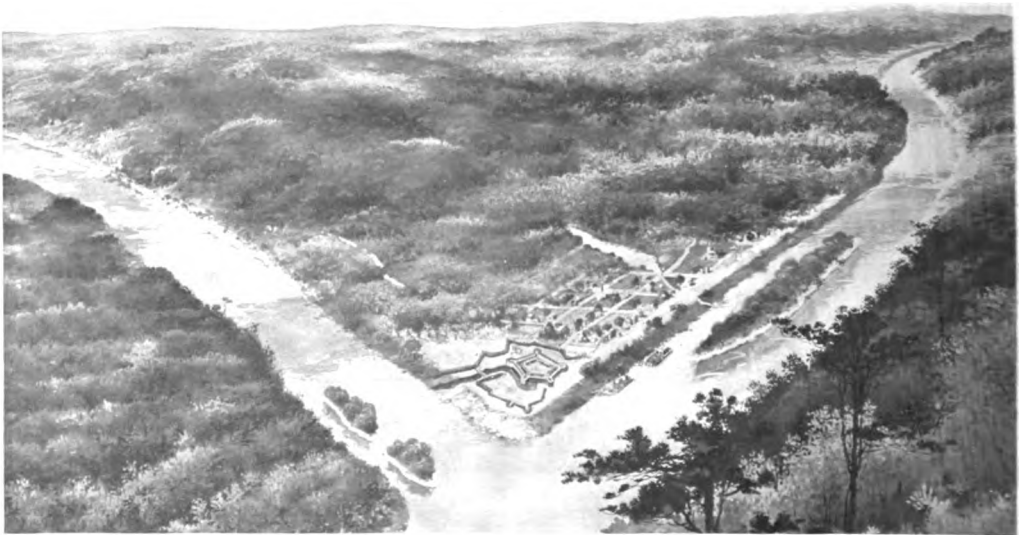
sion of bridges melting away in the darkness upstream, and to majestic Mount Washington and Duquesne Heights, which, wrapped in silence and that darkness that artists term *chiar'oscuro*, lift their varying crests for almost a thousand feet, while from the city came that surge of sound that is neither roar nor murmur, but Pittsburgh's undying pæan to the God of Industry.

With startling suddenness one of those huge phantom structures, or phantom groups of structures, on the river's bank that they call industrial plants shot heavenward a very inferno of flame. The first angry red changed quickly to yellow. All other lights—the voluptuous radiance of the moon and the brilliant mass of the city's electric illumination—were for the moment dimmed, forgotten. Higher and yet higher, fuller and yet fuller, became the volcanic pyre of light. Then a belch-



FORT DUQUESNE AS SEEN BY WASHINGTON, 1754

Half a year before Washington passed down the Monongahela River and, at the junction of that stream with the Allegheny, derived his quick impression of the strategic importance of the land now occupied by the present city of Pittsburgh, the French, under Contrecoeur, drove off a party of English fur traders who had located there, and built a fortification which they named Fort Duquesne, in honor of the Governor-General of Canada, the Marquis du Quesne de Menneville.



FORT PITT, RISEN FROM THE RUINS, 1758

To relieve Major James Grant, who had sustained defeat in an attempt to surprise the French stronghold, General Forbes led a British army of 7500, whose quartermaster was Benjamin Franklin, from Philadelphia, and after many conflicts with bands of hostile Indians, arrived before Fort Duquesne, which the French burned before taking flight. Forbes re-named the ruined post Fort Pitt, while the little community of 250 souls huddled about the fortification became known as Pittsburgh.



PITTSBURGH AND FORT FAYETTE, 1791

To better guard the town of Pittsburgh, now grown to 2800 souls, against incursions of the Indians from the Allegheny Valley, a fortification was erected above the community, at about the present Penn Avenue and 6th Street and named Fort Fayette. The first large iron contract filled at Pittsburgh was the casting of four hundred 6-pound shot for use in General Wayne's expedition against the Indians, undertaken in the following year



PITTSBURGH, "THE IRON TOWN," 1817

Following the discovery of iron ore in the Youghiogheny Valley toward the end of the 18th century, Pittsburgh made rapid strides as a manufacturing center and became known as "the Iron Town." By 1817 the population had increased to 6500. The glass, lumber and boat-building trades flourished at this period, and two national armed galleys, the *President Adams* and *Senator Ross*, were launched. The star of Pittsburgh's industrial destiny was already in the ascendant.

ing of black smoke, all-engulfing, and the flames as suddenly died. Again Pittsburgh reflected her nocturnal splendor.

From everywhere and from nowhere there creeps in upon the scene a filmy, diaphanous curtain of vapor, vanguard of one of those heavy river fogs for which Pittsburgh and her marvelous natural environs are famous. Gradually the lustre of the city is clouded. But the alignment of street lights from the waterfront inward remains clearly defined. Heavier masses of fog now drift in, and yet heavier masses.

Looking down from Mount Washington

is pierced by a ray of leaden blue. It is the dawn of Easter!

Forth from those recesses of shadow, where we know the city stands, and another river flows, and great hills arise, there floats the cadence of Easter bells, reduced by their remoteness to the silver voice of the celesta. Their Angelus is measured in a staccato rhythm that symbolizes unconsciously the virile energy of the magnificent city whose worshippers they call to prayer.

Before the approaching day the shadow mass gives way. Black now yields to gray.



"THE NATION'S WORKSHOP," 1859

GROWN TO A CITY OF 90,000, PITTSBURGH, IN 1859, WAS THE INDUSTRIAL CENTER OF THE AMERICAS. THE RAILROAD AND THE TELEGRAPH WERE AT THAT TIME ILL-DEVELOPED, AND ALMOST ALL OF THE TRAFFIC WAS CARRIED ON BY THE RIVERS

in the direction of the electric opulence of a while ago, now curtained by the smoke-tinged fog, the beholder descries a few of the nearer lights of Pittsburgh and of the distant Allegheny heights as stars studding a background of dusky velvet. Where flowed the river there is a yawning abyss. The surge has become muffled and now is stilled. Perhaps it is the hallowed occasion; perhaps but the fog, Pittsburgh reposes in silence absolute! Gray follows gray, yielding to black upon black, the only relief those twinkling stars of light against their background of dusky velvet. Another moment and the sombre heaven

and gray to the light of morning, and by one of those kaleidoscopic changes which mark every phase of the organic life of the region, the Industrial Capital of the World, whose yearly commerce has come to double that of New York, London, Hamburg and Marseilles combined, stands revealed in its strange and fascinating contour of topography.

From the "fictionized" descriptions of the city, which have come to be accepted throughout the country, Pittsburgh is apt to be regarded from without as a sort of magnified composite of factory, smelter, mine and switching-yard, wherefrom there



THE OFFICE STRUCTURES OF DOWNTOWN PITTSBURGH ARE MANY AND IMPOSING

OLIVER BUILDING

BANK OF PITTSBURGH

FARMERS' BANK BUILDING

CARNEGIE BUILDING

FRICK BUILDING

ARROTT BUILDING

KEENAN BUILDING

JENKINS ARCADE

FIRST NATIONAL BANK

issue smoke and soot and dirt and an admittedly vast production of distinctively material objects. In the phenomenal accomplishment of the mills, the fact that somewhere in the confusion of steel and iron, cement and coal, a community of more than a million souls is submerged oftentimes is forgotten, or not at all taken into consideration.

As the impressively splendid educational and art institutions of Pittsburgh, the many stately church edifices and schools, the great banks, fine hotels, shops and railroad stations, the palatial homes and the magnificent system of parks and boulevards are surveyed, the truth is forced home that here is a city that combines the affluent dignity of New York, the polished elegance of Boston and Philadelphia, the sheer might of Chicago and a picturesque setting that, in its own way, rivals San Francisco's.

A city of delightfully capricious moods of atmosphere is Pittsburgh. The hills and the rivers that embrace it impose constant and erratic changes of temperature, of wind and of light, but these changes are delightfully and subtly effected, and the smoke, so decried by unfriendly critics and at the present time warred upon by the municipality itself, plays a fascinating role in these atmospheric metamorphoses. Behind Pittsburgh's every frown there lurks a radiant smile. The passing cloud, curtain of fog, drift of smoke and even the shower that seems to have ushered in the very deluge, invariably are dispelled by the rays of the sun. As is the play of the elements over Pittsburgh, so is the street life—changing, shifting, restless, never stilled, and the older thoroughfares, for the most of the working day, present a maze of surging, hurrying humanity.

A glance from Mount Washington over the inspiring panorama that is presented by Pittsburgh and its sharply outlined surroundings of land and water suffices to demonstrate the commanding position which the city derives from its situation at the point where the Monongahela and the Allegheny Rivers unite their waters to form the Ohio.

"The Father of His Country" was also the Father of Pittsburgh. On the 24th day of November, 1753, Washington arrived at the point of land now occupied by the city. He had been sent to the Ohio by

Governor Robert Dinwiddie of Virginia to treat with the commander of the French forces, who had, in entering the Ohio Valley, trespassed upon the domain of the crown-chartered Ohio Company. Proceeding down the Monongahela, he was struck by the strategic advantage of the land dividing the Allegheny and the Monongahela above their junction, and his unerring judgment prompted him to the following words of recommendation—words which were destined to spell the industrial supremacy of the situation long after the necessity for its military employment had passed:

"I think it extremely well situated for a fort; as it has absolute command of both rivers (the Allegheny and the Monongahela). The land at the fort is twenty-five feet above the common surface and the water, with well-timbered land all around it, very convenient for building. The rivers are each a quarter of a mile or more across, and run very nearly at right angles—the Allegheny appearing northeast, the Monongahela southeast. The former of these two is very rapid and swift-running water, the other deep and still, without any perceptible flow."

The strategic value of the city's site for defensive purposes was recognized by the United States Government at the outbreak of the Civil War, when one of the chief arsenals in Union territory was there established.

Almost without regard to the vicissitudes of the recurring wars of the early period, the commercial development of the site whereupon Pittsburgh now stands was rapid. Three months after Washington's visit, Captain Trent and a few Virginia militia arrived at the Forks and laid the foundation for a fort. On the 17th day of April, 1754, the unfinished stockade, commanded by Ensign Wood and garrisoned by about fifty men, was surrendered to the French Captain Contrecoeur. A fortification was straightway erected and named Fort Duquesne, in honor of the Marquis du Quesne de Menneville.

No more cruel chapter is recorded in the annals of New World history than the short and decisive conflict that took place on the morning of July 9, 1755, eight miles up the Monongahela River from Fort Duquesne, between the French and In-



ELEGANCE AND DIGNITY MARK PITTSBURGH'S EDUCATIONAL INSTITUTIONS
MUSEUMS AND PARKS

CARNEGIE LIBRARY
18TH REGIMENT ARMORY
SOLDIERS' MEMORIAL

HIGHLAND PARK

PITTSBURGH ATHLETIC ASSOCIATION CLUB HOUSE

UNIVERSITY OF PITTSBURGH

WEST PENN HOSPITAL
FORBES (BASEBALL) FIELD

OLD BLOCK HOUSE, 1704



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ORIGINAL EGYPTIAN CRAFT IN CARNEGIE MUSEUM

ANTECEDATING ABRAHAM BY SEVEN CENTURIES IS A CEDAR BOAT, 36 FEET LONG, WHICH WAS FASHIONED BY THE EGYPTIANS AND RECOVERED FROM THE TOMB OF A "MASTER OF THE ROYAL CRAFT." IT NOW REPOSES IN THE CARNEGIE MUSEUM AT PITTSBURGH

dians, on one hand, and the British, commanded by General Edward Braddock, on the other, which ended in "Braddock's Defeat." To-day one of the busiest of industrial scenes in all America is the spot where this battle raged.

The Frick and Carnegie Buildings and the massive Allegheny County Court House stand upon the site of a second engagement between the French and the English. A party of 800 under Major James Grant attempted to surprise the fort on the morning of September 14, 1758, but was overwhelmed and routed. Happily the British General Forbes, who had moved from Philadelphia at the head of an army of 7,500, came within fifteen miles of the fort on the 24th of November, when the French burned the fort and fled. The next day Forbes occupied the place and named it Pittsburgh, after William Pitt the elder, Prime Minister of England, who was justly celebrated for the friendliness he had manifested toward the American colonists.

Seven months after the Declaration of Independence at Philadelphia, and little more than a quarter of a century later than Washington's arrival on the scene, fourteen carpenters and sawyers came to Pittsburgh and set to work to build 30 large batteaux, 40 feet long, 9 feet wide

and 32 inches deep, which were designed to transport troops. Such was the commencement of the boat-building industry, which developed steadily in volume and in monetary representation until the end of the last century, and which has but lately entered upon a notable revival and expansion.

This period witnessed the birth of two other industries which were destined to take an important place in the building of the Industrial Capital of the World of to-day—the lumber trade and the manufacture of glass.

Meanwhile iron had been discovered by Christopher Harrison along the waters of the Youghiogeny, and the closing decade of the eighteenth century found the furnace known as the Alliance Iron Works in operation. A "record" contract of the day was ordered in January, 1792, for the making of 400 six-pound shot for use at Fort Pitt and in General Wayne's expedition against the Indians in the Ohio country.

From the modest shipments of iron ore and lumber and produce that were borne on the river in those early days, the Monongahela has developed a traffic that last year totaled 11,538,228 tons, or 50 per cent. of the traffic of the entire Mississippi River system, of which the Monongahela



STATELY CATHEDRAL AND CHURCH EDIFICES GRACE THE CITY'S EMINENCES

- | | | |
|----------------------------------|----------------------------------|-------------------------------------|
| FIRST BAPTIST CHURCH | SIXTH UNITED PRESBYTERIAN CHURCH | CALVARY EPISCOPAL CHURCH |
| EMORY METHODIST EPISCOPAL CHURCH | THIRD PRESBYTERIAN CHURCH | ST. PAUL'S ROMAN CATHOLIC CATHEDRAL |



JOHN M. GOEHRING
PRESIDENT OF THE CITY COUNCIL

in navigable mileage represents but the slightest fraction—about 1 in 140.

The wonder of great modern Pittsburgh is not so much the stupendous mass, volume and collective wealth of her industries as their ramifications. Every object, useful and ornamental, that the mortal mind might conceive, in one form or another is produced in Pittsburgh, but in magnitude of capital invested and labor employed the iron and steel manufactories are preeminent.

The latest statistics compiled by the Pittsburgh Industrial Development Commission reveal the fact that of the total capital of \$642,527,046 invested in the multitudinous industries of the metropolitan district of Pittsburgh, the sum of \$421,131,927 is represented by the iron and steel and wire

industries of the city are 159,977 salaried employes and wage earners, and of this number 88,194 are on the pay-rolls of those making iron and steel, and of the total amount of \$115,049,924 paid in salaries and wages, the iron and steel workers receive \$66,788,642.

It costs \$366,892,433 for raw materials necessary to keep the "world's workshop" busy, and \$264,268,372 are spent for the raw materials that enter into the production of iron and steel.

Pittsburgh's colossal contribution to the production of the world is represented in the grand total of \$578,815,493, and of this sum the iron and steel yield is considerably more than three-fifths, or \$389,924,590.

In addition to the older and well-known forms of steel manufacture, the great mills have lately entered upon the making of steel railroad ties. The steady and constant growth of this product gives promise of a huge plant soon to be erected to provide for its separate needs. The advantage of the steel tie has not far to be sought. It may be rolled to



MEMBERS OF THE CITY COUNCIL

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MEMBERS OF THE CITY COUNCIL

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- ENOCH RAUH
- W. G. WILKINS
- J. P. KERR

works, blast furnaces and forging plants. Of the total of 2,369 industrial establishments maintained in the district, 321 are devoted to the manufacture of iron and steel products.

Engaged in the maintenance of all the

any length desired and it is well-nigh indestructible. A single tie may be made to support four tracks. Already the Bessemer & Lake Erie Railroad is equipped its entire length of 250 miles with steel ties, while the Elgin, Joliet & Eastern, the Duluth, Mesaba & Northern and the Duluth, South Shore & Atlantic Railways have followed suit. On its street railways, the City of Cleveland, Ohio, permits no other to be used, owing to the fact that the now discarded wooden tie necessitated the frequent tearing up of streets.

Another thriving industry, that of making glass, wherein more than \$20,000,000 is invested, has developed a new and distinctive "side line," which gives indication of one day rivaling the ancient enterprise from which it has sprung, in a product known to the trade as "Carrara glass." In appearance it closely resembles the marble of the famous Italian quarries. The process of manufacture is fairly identical with that of making heavy plate glass. Unlike marble, "Carrara glass" is impervious to moisture. It retains its original color and may be as easily cleaned as window glass. For these reasons it has come into active demand for use in hospital operating rooms, soda fountains, bathrooms, lavatories and similar places of installation, where absolute sanitary conditions are requisite.



Photo D. Rosser

WILLIAM A. MAGEE
MAYOR OF THE CITY OF PITTSBURGH

The product has but lately found a place in commercial operations, in the wainscoting of corridors and interior finish work, and large installations have been made in the recently completed Woolworth Building in New York and Union Central Life Insurance Building in Cincinnati. As the cost of output has been brought almost to a par with that of Tuckahoe marble, it



THE \$1,000,000 "HUMP REMOVAL"

UNIQUE AMONG MUNICIPAL ENGINEERING WORKS AND ACCOMPLISHED WITH LITTLE OR NO INTERRUPTION TO TRAFFIC IS THIS IMPROVEMENT, UNDERTAKEN IN THE HEART OF THE BUSINESS DISTRICT, BY WHICH 2.10 MILES OF STREETS, WITHIN AN AREA OF 33 ACRES, HAVE BEEN REDUCED FROM A GRADE OF 7.5 PER CENT., TO A GRADE OF 4.8 PER CENT., WITH A MAXIMUM CUT OF 10.3 FEET

is anticipated that "Carrara glass" will come to be yet more freely used in the construction of office buildings and ornamental structures.

Innate refinement and a natural studiousness are a distinguishing trait of the average Pittsburgher. The manufacturer is not content to produce a certain type of material. He must needs familiarize himself with the origin and the history of that material. The maker, for example, of steel, or of iron, or of plate glass, will be found to be fully versed in the career of his industry from its infancy and, frequently, will be found to be the possessor of priceless volumes, prints and art works upon the subject, while he may,

printed in that year at London. And yet another is "The Plate Glass Book," printed in London in 1758 and "edited by a Glass House Clerk."

In the quaint phraseology of the seventeenth century, "The Art of Glass" relates the social and political prerogatives enjoyed by those who engaged in the making of mirrors and whose operations were so surrounded by the element of mystery as to partake, in the popular mind, of the wizardry of alchemy:

All those who employ themselves in the Art of Glafs, do it always without derogating from their Quality, as we have noted in Chap. 3, which our Kings have always taken care to maintain.



STEEL MERCHANDISE BARGE USED ON OHIO AND MISSISSIPPI RIVERS

BUILT BY AMERICAN BRIDGE COMPANY FOR CARRIAGE OF STEEL PRODUCTS TO NEW ORLEANS. DIMENSIONS: 200 FEET LONG, 36 FEET WIDE, 10 1-2 FEET DEEP; CARGO CAPACITY, 1,500 TONS ON NINE-FOOT DRAFT

also, maintain a private art gallery or library of the broadest range, or may have endowed a public institution of that character.

On the desk of Carl Sherman Lamb, an officer of the Pittsburgh Plate Glass Company, there repose three little volumes that would be coveted of litterateurs here and abroad, and they represent many months of search through the bookstalls of old London. One is "Arte Vitrarum" of Antonio Neri, published, as its title would indicate, in Latin, and bearing the imprint of "Florentinide, Amstelædami, 1686." Another is "The Art of Glass," from the French of H. Blancourt, first translated into English in 1699 and

Another fragment from this ancient chronicle sets forth that in those early years of the industry a "plate glass trust" was created.

A description of the process of plate glass manufacture, contained in the volume of 1758, reveals the fact that the manner of grinding and of polishing, in its essential features, differed not basically from that of to-day. A comparison of prices contained in a "Tariff of Prices of Polished Plate Glass," appended to the later volume, shows that in that day a sheet of plate glass 30 by 50 inches was quoted at £26 7/ (\$131.75), as against the figure of \$4.50 prevailing in the present-day market.



BRIDGE BUILDERS TENDING THEIR GARDENS IN OFF HOURS

THE WORK-A-DAY ROUTINE OF LIFE IN THE BIG PLANT OF THE AMERICAN BRIDGE COMPANY AT AMBRIDGE, PENNSYLVANIA, ON THE OHIO RIVER, IS RELIEVED BY COMPETITIVE GARDENING IN WHICH THE EMPLOYEES ENGAGE ON LANDS PROVIDED THEM GRATIS BY THE COMPANY

Treasured in Pittsburgh's art galleries, museums and libraries are rare paintings, statuary, *objets d'art*, books and manuscripts and the physical evidences of lost civilizations. A relic of the prehistoric age is the famous diplodocus which stretches its almost incredible length in the main salon of the Museum of the Carnegie Institute. By the generosity of the Institute's founder, Andrew Carnegie, replicas of this monster skeleton have been presented to the leading scientific museums of Europe and North and South America.

Of scarcely secondary interest is another exhibit, an original Egyptian craft, which is credited to antedate Abraham by almost seven centuries. This boat, which was fashioned of cedar and the parts bound together by thongs of a fibrous material, in all probability papyrus, but now kept together by steel wire bands, is 36 feet long, 8 feet wide and about 5 feet deep, with a deck of cedar planking, was evidently built to withstand the wash of seas off and beyond the Delta of the Nile. It was recovered in the nineties from a



PART OF THE HARVEST FROM THE AMBRIDGE GARDENS

PRIZES ARE BESTOWED BY THE AMERICAN BRIDGE COMPANY FOR THE LARGEST AND BEST CROPS GROWN BY THEIR EMPLOYEES IN THE GARDENS AT AMBRIDGE, WHILE THE YIELD BECOMES A FACTOR IN DECREASING THE COST OF THE EMPLOYEES' LIVING

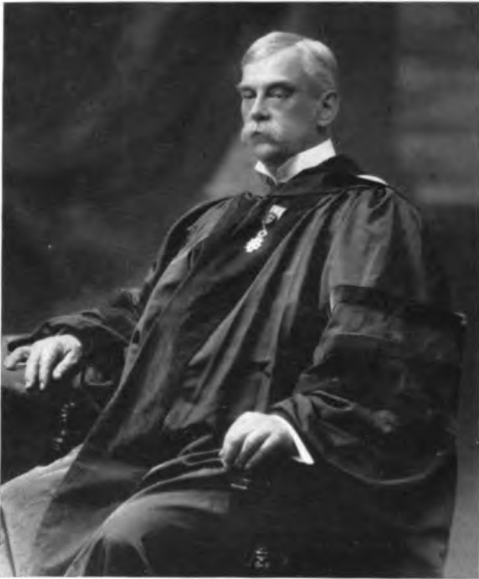


Photo Eug. Pirou, Paris

W. J. HOLLAND, Ph.D., LL.D.

DIRECTOR CARNEGIE INSTITUTE; IN ROBES OF CHANCELLOR
AND WEARING DECORATION OF THE LEGION D'HONNEUR

crypt at Dahshur, Egypt, where, ages after its probable interment, the descendants of Abraham played an important historical role. Found in the crypt with the cedar vessel was the mummy of a "Master of the Royal Craft," a functionary who may be supposed to have occupied the same relation to the ancient Egyptian state as is to-day held by the American Secretary of the Navy.

The first photograph to be taken of the historic craft in its entirety is presented on an accompanying page of NATIONAL WATERWAYS.

Fourteen thousand miles of navigable rivers are directly connected with Pittsburgh. While her present industrial supremacy has been evolved from this natural means of communication with the very heart of the United States, but a minimum advantage has been taken of the city's extraordinary situation. This has been due principally to the fact that the Ohio River channel, upon which the water traffic in and out of Pittsburgh chiefly depends, is wholly or partly closed to navigation at certain periods of the year—by ice in winter and drought in summer. The Davis Island dam, erected in the Ohio River by the United States Govern-

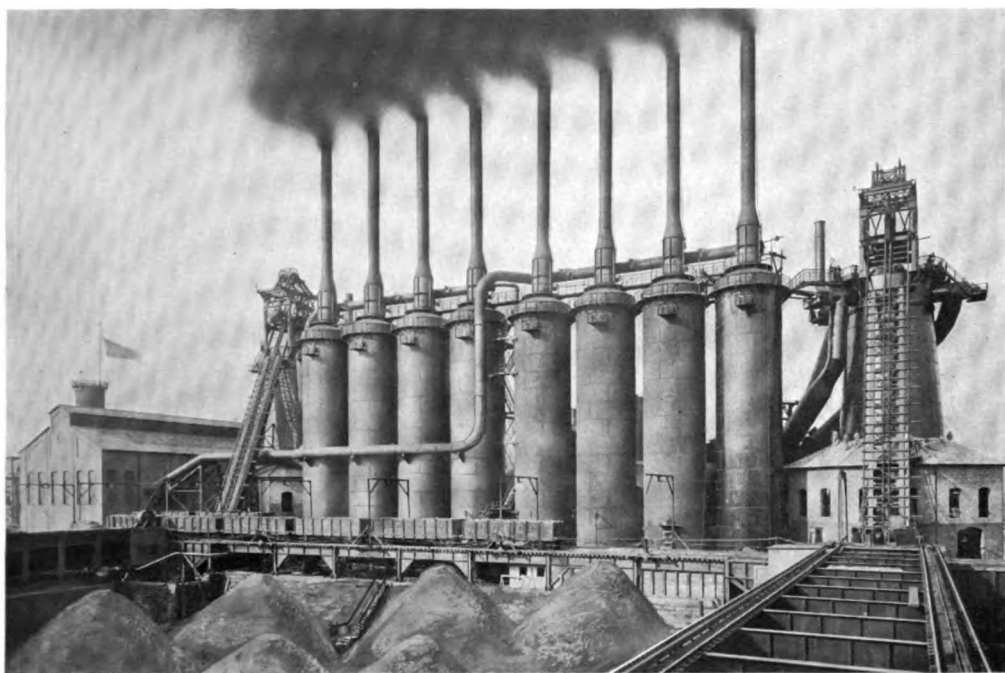
ment, five miles below the city, at a cost of \$940,000, forms a slack-water harbor eight miles in length, which provides a normal depth of ten feet.

By the River and Harbor Act which passed Congress June 25, 1910, the Ohio River was placed first on the list of waterways scheduled for improvement, and the accomplishment of navigation throughout its length was made in the nature of a national project—as much so, indeed, as the completion of the Panama Canal. This great work was planned to consume twelve years from that date, to entail an expenditure of \$63,000,000, and to embrace the construction of 54 locks and movable dams. Fourteen of these locks and dams are completed, twelve are now under construction and, by the last River and Harbor Act, signed by the outgoing President on March 4, four more were authorized. It is a fact worthy of note that of the 7000 miles of tributaries of the Ohio River, 90 per cent. have been canalized, while the parent stream, until the legislation aforementioned, had been largely neglected.

Against a prevailing rail cost of \$4.50 per ton, coal is being transported from Pittsburgh to New Orleans, a distance of 2100 miles, by barges on the Ohio and Mississippi Rivers, at a rate of 70 cents per ton, and it is figured that this cost may be still further lowered by the improvement of the Ohio River.

It were unjust to say that Pittsburgh has awakened. The city is of the sort—and there are few such—that never sleeps! Pittsburgh, for more than a century and a half, has been—not sleeping, but so engrossed in the building of her multitude of industries to their present veritably incredible stage of production, that she has failed to realize how those industries have encroached upon her civic dignity and charming physical environment.

An American city of the twentieth century would surely be an exception that had not to face that vital problem of the age, the high cost of living. Pittsburgh is setting about to solve that problem, and they who think for Pittsburgh are broadly approaching the subject from the standpoint of development of the hitherto neglected water transportation facilities, with their inevitable effect upon living conditions, of the improvement of street



THE MODERN TYPE OF BLAST FURNACE

THE CYLINDERS TOPPED BY SMOKE-STACKS ARE CALLED HOT-BLAST STOVES. THE AIR, FORCED BY POWERFUL ENGINES AROUND THE WHITE-HOT FIRE-BRICK WITH WHICH THEY ARE LINED, IS HEATED TO A TEMPERATURE OF 1200 TO 1400 DEGREES

traffic, of the increase of communication between the sections of the city divided by the rivers, and of the beautification of the waterside and the highways and by-ways of a city of enviable historic associations.

"The chief hope of Pittsburgh against rising prices and high costs lies in cheap transportation," declared William A. Magee, the Mayor, in his last annual message. "The opening of the Ohio and Allegheny Rivers will give Pittsburgh the benefit of water carriage costs not only for those supplies entering the city on the river, but the competitive principle will result in lower transportation costs generally, regardless of the type of carriage."

Pittsburgh's vexing problems of the day are the problems of the greater cities of the East. Like New York, Boston, Philadelphia and Baltimore, the city, in its older section, suffers from the restrictions of narrow thoroughfares imposed upon it by the short-sightedness of its early settlers. Rugged hills upon one side and the two rivers, the Monongahela and the Alle-

gheny, upon the other sides, encompass that older section and render outward expansion well-nigh impossible, saving, as on Manhattan Island, in New York, by resort to the erection of skyscrapers. Many such, of imposing proportions and notable architectural beauty, have been built, and the immense numbers of people whom these accommodate but add to the congestion of traffic in the downtown streets and in the arteries of travel leading therefrom during the so-called rush hours.

Pittsburgh's river frontage extends for $31\frac{1}{2}$ miles—along the Monongahela for $12\frac{1}{2}$ miles, along the Allegheny for $11\frac{1}{2}$ miles and along the Ohio for $7\frac{1}{2}$ miles. A studied scrutiny of the scene discloses the fact that the benefit realized from this river approach is far from what it should be. The practical sense and the æsthetic sense are at once startled by the evidence of woeful neglect that is to be seen on every hand—and this in the face of endowments by nature that should contribute to absolute grandeur of landscape and the fullest utilitarian accomplishment.

*D. Rosser*

W. M. JACOBY
Superintendent Bureau
of City Properties

Eils Bros.

WM. H. STEVENSON
President Chamber of
Commerce

Palace Studios

IRA S. BASSETT
Traffic Manager
Chamber of Commerce

Harris & Ewing

Hon. A. J. BARCH-
FELD, M. C.
Member Rivers and
Harbors Committee

Harris & Ewing

Capt. W. B. RODGERS
Director Nat'l Rivers
and Harbors Congress

One needs but to rest the eye upon the Soldiers' and Sailors' Monument, crowning a stately bluff on the Allegheny shore just where the river of that name enters the Ohio, to appreciate the striking contrast between what it is possible to effect at Pittsburgh and what generally has been effected.

Ingrained in the program for the economic progress of the city is the fullest development of the riverfront resources, and this development is vitally related to the greater problems of transportation, chiefly by water, the solution of which must forever dispel the fear of the loss to Pittsburgh of its industrial supremacy and make for the tenfold expansion of its present industry and commerce.

Not all men are agreed as to the specific forms which the several movements for the bettering of the city's status shall take. But an encouraging feature of the liveliest controversy is to be discerned in the trend of all efforts by political and civic bodies of widely divergent interests toward the completest utilization of the magnificent waterfront.

To form a comprehensive plan for the relief of existing conditions at Pittsburgh, Dr. J. T. Holdsworth, of the University of Pittsburgh, was recently commissioned by the Mayor to study and report upon the economic needs of the city. The results of Dr. Holdsworth's labors are set forth in a treatise which has gained nation-wide prominence, known as the "Economic Survey of Pittsburgh." The cost-of-living problem occupies a leading place in the scholar's consideration, and emphasis is put by him upon what he terms the "pri-

mary needs" as follows: Elimination of the smoke nuisance; more and better moderate-cost homes; improvement of transit facilities; larger utilization of educational and recreative facilities; flood protection; diversification of industries; lower freight rates; better utilization of land; continuous social surveys, and other features that are essentially administrative or sociological, and quite local in their relation to the question at issue.

The local transportation problem Dr. Holdsworth regards as of exceeding importance, and it is a significant fact that he points to the Pittsburgh-to-the-Lakes Canal project, and the larger utilization of the waterways approach to Pittsburgh for the extension of trade, as "questions vital to our industrial and economic growth."

With Mayor Magee as its chairman, the Lake Erie and Ohio River Ship Canal Association was organized in December, 1910, to work in co-operation with the Lake Erie and Ohio River Ship Canal Company, a corporation which had been organized five years previously under a charter from the State of Pennsylvania and under a national charter conferred by act of Congress, and the Ohio and Pennsylvania Ship Canal Company, of Cleveland, Ohio. The president of the Pennsylvania corporation is John E. Shaw, of Pittsburgh.

The projected waterway will extend from the point on the north bank of the Ohio River at Beaver, Pa., where the Beaver River flows into that stream, in a general north-northwest direction, to the mouth of Indian Creek, on Lake Erie, about seven miles west of Ashtabula. The



<i>Baird</i>	<i>Johnston</i>	<i>Johnston</i>	<i>Johnston</i>	<i>Johnston</i>
COL. T. J. KEENAN Vice-President for Penn- sylvania Nat'l Rivers and Harbors Congress	COL. H. P. BOPE President Pittsburgh Industrial Development Commission	F. F. NICOLA Vice-President Pitts- burgh Industrial Devel- opment Commission	JOHN E. SHAW President Lake Erie & Ohio River Ship Canal Company	GEN. A. L. LOGAN President City Planning Commission

total length of the route is 103 miles, but for 50 miles the Beaver and Mahoning Rivers will be canalized, leaving only 53 miles of canal actually to be dug to provide a 12-foot barge channel.

The present session of the Pennsylvania Legislature has under consideration a measure to appropriate \$150,000 for preliminary surveys and to authorize the appointment of a commission empowered to build and operate the canal with moneys voted by the various counties or municipalities of Pennsylvania, Ohio and West Virginia that would be benefited by the new waterway. Measures have already been passed at Columbus, Ohio, and Charleston, W. Va., to concur in this plan, and these, it is believed, will have the effect of providing an encouraging precedent for the passage of the legislation at Harrisburg, where the bill recently passed out of the House Judiciary Committee, with the approval of that body, and now awaits the consideration of the House.

The cost of the proposed canal is estimated at \$60,000,000, which will provide for interest during the period of construction and thenceforth until the tolls from commerce cover all fixed charges.

The major percentage of eastbound traffic on the Great Lakes is iron ore moving from Lake Superior to ports on Lake Erie, whence it is hauled by rail to furnaces in the territory to be traversed by the canal and in the Upper Ohio and Monongahela valleys, of which Pittsburgh is the logical center. Likewise, bituminous coal is constantly moving by rail from the latter region and from the Allegheny River

territory on its way to Upper Lake ports for consumption. The canal will provide a continuous water service for this commerce, that now averages 30,000,000 tons moving south from the Superior district to Pittsburgh, and 25,000,000 tons moving north from Pittsburgh.

By the creation of the proposed waterway more than three-fourths of the steel-producing interests of the country will be afforded a direct water service. As two tons of ore are required in the making of a ton of pig iron and the prevailing rate for the former is 96 cents per ton, a saving of the difference between \$1.92, the present rate for two tons of ore, and a probable \$1.00 for the two tons delivered by water, would be realized to the independent consumer. Pig iron has been quoted at from \$13.00 to \$14.00 per ton for the last three or four years.

From Lake Erie to Duluth, a distance of more than 900 miles, coal is moved in steamers of from 8,000 to 12,000 tons capacity for 30 cents per ton, while the rail haul from Pittsburgh to Lake Erie, a distance which averages only about 135 miles, is approximately 90 cents per ton.

The Lake Erie and Ohio River canal will create a continuous water route between Lake Superior and the St. Lawrence Valley, on the one hand, and the Gulf of Mexico and the Pacific Ocean, via Panama, on the other hand, and when the Erie Canal is re-opened, will complete a splendidly economical waterway between Pittsburgh and the Atlantic Ocean, with tremendous advantages accruing to the export trade of the Pittsburgh section.



LARIMER AVENUE BRIDGE SPANNING THE BEECHWOOD BOULEVARD

AN EXAMPLE OF THE ARTISTIC SOLUTION EFFECTED OF THE PROBLEM OF DECLIVITOUS HILLSIDES THAT BREAK THE CONTINUITY OF PRINCIPAL THOROUGHFARES. THE LARIMER AVENUE BRIDGE, THE LONGEST AND ONE OF THE MOST BEAUTIFUL OF HIGHWAY STRUCTURES IN THE UNITED STATES, IS NOW NEARING COMPLETION

The municipal authorities and the various civic and commercial organizations are at work upon a great program which is designed to place Pittsburgh in the front ranks of the progressive cities of the world. Among the greater schemes in this program is the so-called Anderson plan for bringing into the city additional trunk lines of railway by means of a proposed subway system. In an interview with the writer, Mayor Magee thus dwelt upon this subject:

"There are several trunk lines passing within striking distance of Pittsburgh which do not enter the city because of the prohibitory cost of terminals. The Gould interest forced its way into Pittsburgh with the Wabash Terminal at a cost of \$25,000,000, a cost so great as to throw the Wabash and the Wheeling & Lake Erie Railroads into the hands of receivers, destroy the Gould dream of a trans-continental railroad and make serious inroads upon the Gould fortune.

"The Anderson plan is to supply a passenger terminal by means of a subway running from one end of the city to another, to let the freight terminals be located outside the city, or in some part within the city that might be reached at comparatively small expense. With such a layout, it is the idea that such railroads as the Erie, the New York Central and the

Pittsburgh, Shawmut & Northern would extend branches into the city.

"Pittsburgh has been for many years virtually within the grasp of the Pennsylvania system. Competition has been largely eliminated and the city has suffered much from arbitrary discrimination practiced against it."

A belt-line railway, proposed by F. F. Nicola, vice-president of the Pittsburgh Industrial Development Commission and an architect and real estate operator who has led in building up the aristocratic Schenley Farms section, doubtless would facilitate the distribution of the city's tremendous industrial traffic. This plan, which also enters into the administrative program, is based upon the peculiar topography of Pittsburgh which confines transportation and industry, with few exceptions, to the bottom lands along the rivers, putting a premium upon the value of this kind of land and thereby making industrial sites too high in cost for most prospective manufacturers.

A contemplated transportation improvement which had been successfully advocated, for the construction of two tunnels under the Monongahela River, suffered defeat late in March upon a technicality of law.

In authorizing the construction of the tunnels, the Board of Commissioners of

Allegheny County failed to comply with a law which required it to pass a resolution to the effect that the work was deemed expedient, and, accordingly, the Court of Quarter Sessions rendered a decision enjoining the commissioners from proceeding with the improvement. Efforts are being renewed to bring about the construction of these tunnels with the proper observance of legal requirements. In the interim, advantage is being taken of the situation by the advocates of a movement for the building of a bridge across the Ohio River to connect the North Side of Pittsburgh, the "Allegheny" of old, with McKee's Rocks. A steel span 1000 feet long, to accommodate street car, wagon and pedestrian traffic, is known to be favorably regarded by the War Department. The cost of such a structure would be \$1,250,000. There being no highway bridge between the location selected and the Point, a distance of three miles upstream, the proposed span would form a desirable connection between the Woods' Run district of old Allegheny and the "Indian Mound" in McKee's Rocks, and would afford communication between manufacturing plants centering about both ends, that employ from 25,000 to 30,000 men, and it would open up 1500 acres of land adapted for manufacturing purposes.

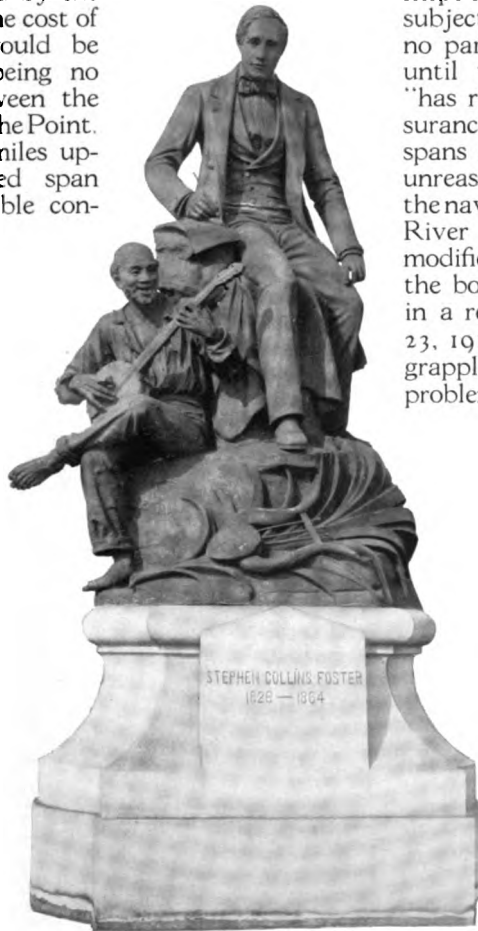
Vitaly related to the object of development of the navigation resources of the several waterways centering at Pittsburgh is the controversy now raging over the proposal to heighten elevation of eight bridgesspanningthe

Allegheny River. Successive boards of engineer officers of the United States Army have reviewed evidence submitted to them by the river, coal and merchant interests of Pittsburgh, from which they have deduced the fact that the bridges at their present height form an unreasonable obstruction to navigation, and during the last administration recommendations were made by Brig.-Gen. W. H. Bixby and Colonels William T. Rossell and C. McD. Townsend, forming the latest board, that unequivocally favored raising the bridges.

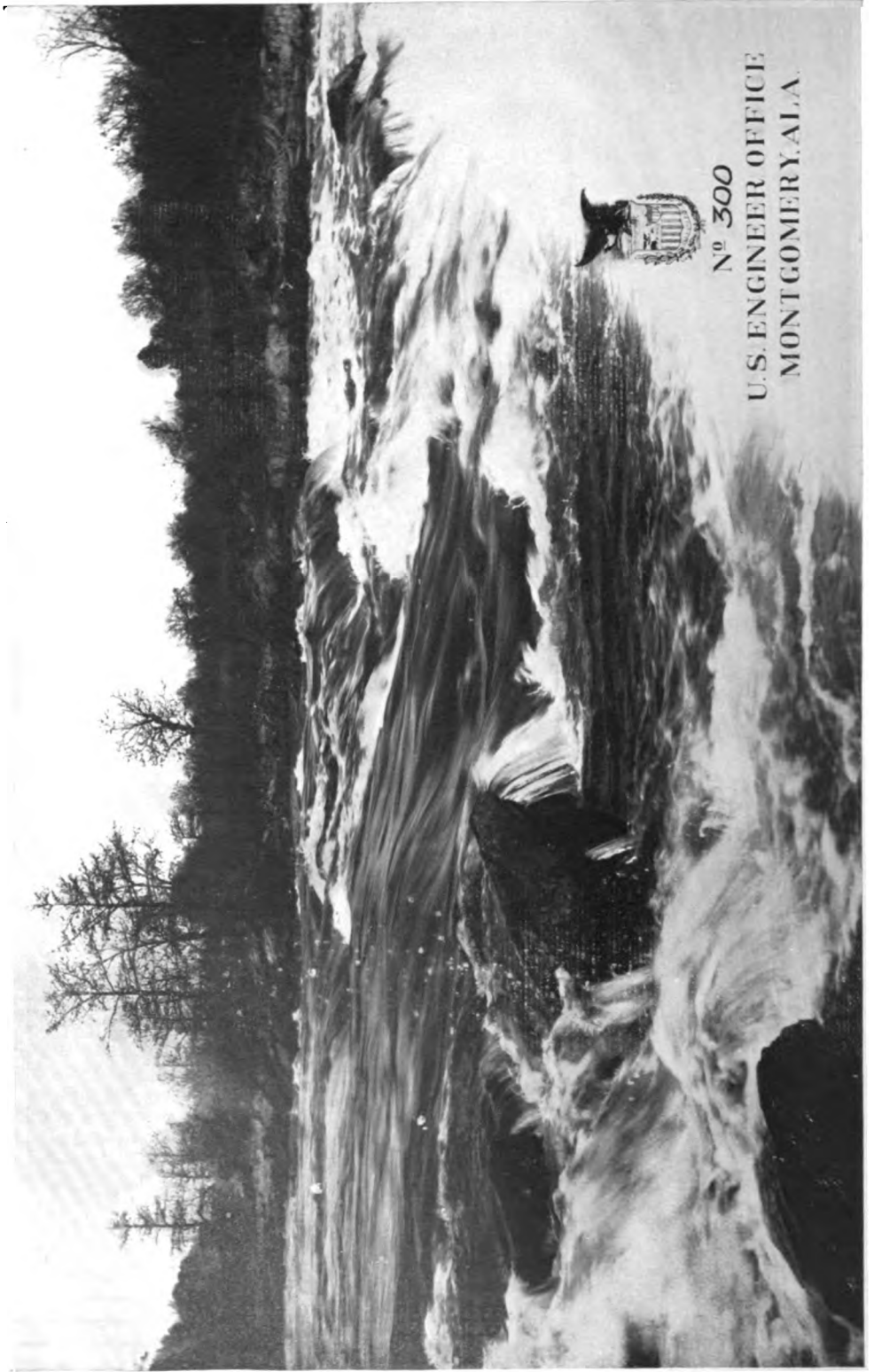
These recommendations were overruled by former Secretary of War Jacob M. Dickinson, but in the last River and Harbor Act, signed March 4, the expenditure of \$300,000 for Allegheny River

improvements was made subject to the condition that no part should be disbursed until the Secretary of War "has received satisfactory assurances that the channel spans of the bridges forming unreasonable obstructions to the navigation of the Allegheny River at Pittsburgh will be modified as recommended by the board of engineer officers in a report dated November 23, 1910." So Pittsburgh grapples with her manifold problems, and the united ambition of her citizens is that she may come to utilize to the full the beauty and abundance of her natural advantages. Long has she sustained the sobriquet of "The Smoky City," but science and government are co-operating to forever dispel this murky influence.

There is every indication that when the skies above Pittsburgh shall have cleared for all time, a city of wondrous natural and artistic grace will be revealed.



MANY LEADING CITIZENS, HEADED BY COL. T. J. KEENAN, ARE AIDING THE MOVEMENT TO SAVE THE FORMER HOME OF THE COMPOSER OF "OLD BLACK JOE" AND "THE SWANEE RIVER," WHOSE BIRTHPLACE WAS PITTSBURGH



N^o 300
U.S. ENGINEER OFFICE
MONTGOMERY, ALA.

THE THUNDER OF THE RAPIDS OF THE COOSA RIVER BESPEAKS THE POWER THAT THERE AWAITS THE HAND OF MAN

ALABAMA, A MODERN ELDORADO

By RICHMOND PEARSON HOBSON, M. C.

FROM the standpoint of assembling raw materials for the world's greatest universal staples of clothing and construction, Alabama must be conceded the very first place in the United States and in the world at large," declares the Representative in Congress from the Sixth Alabama District, who here urges the establishment by law of a Federal Commission on Public Works and Conservation, or a bureau to adjust questions coming within that province as an adjunct of the Department of the Interior.

UP to the present time American industrial development has been chiefly confined to meeting requirements of the home market. This is largely due to the relatively undeveloped condition of the country and its natural resources, and the very rapid growth of the home market itself. It is partly due to the high protective tariff policy which, while it shuts out the industries of the world from the home market,



© Harris & Ewing

also tends to exclude home industries from the world's markets. These conditions are now undergoing fundamental changes. American industries have assumed large proportions and are fast outgrowing the American market. To continue a steady natural growth they must now seek the markets of the world.

The impending revision of the high protective tariff rates will encourage this expansion. It may be said that America's industry is now entering upon a second period of its history, when it must go out and win and hold the markets of the world in the face of the competition of the industries of all other nations standing within their entrenched position of present possession.

The first determined effort on the part of American industries will be inaugurated with the completion of the Panama Canal, and will have for its objective the markets of South America and of the Pacific. The outcome of the struggle for supremacy will depend upon two prime factors; first, cheapness of production of the world staples and, second, cheapness of transportation from the country of production

to foreign markets. It is no depreciation of the other great industrial centers of America to say that both of these prime factors are destined to be realized along the banks of Alabama's waterways, which, as sources of both cheap power and cheap transportation, will insure American supremacy in the markets of the world.

Two factors enter into the question of cheapness of production, assuming always that

the question of labor is adjustable. The first is the assembling of raw materials, and the second is the availability of power for their manufacture. The first and foremost world staple is clothing, for which the masses are dependent upon cotton.

It scarcely needs to be pointed out that Alabama is located almost in the center of the cotton area of the South, which produces over two-thirds of all the commercial cotton of the world. The chief competitors of southern mills are to-day the mills of New England and the mills of Europe, both of which are compelled to bring their raw cotton from the South by long stages of transportation by rail or by rail and water combined. Therefore, other conditions being equal, the South must necessarily become the world's center for the production of cotton goods.

Construction materials, chiefly iron and cement, compose the second class of great world staples. Of these, iron will be the center of competition; for its production two principal raw materials are necessary, ore deposits and coal. These two elements of raw material, together with the limestone for fluxing, are found side by side



Birmingham View Co.

BIRMINGHAM'S LIGHTS STUDDING THE DARKNESS

THE GREAT ALABAMA INDUSTRIAL CENTER GLOWS WITH THE LIGHT OF ELECTRICITY SUPPLIED BY WATER POWER FROM NEARBY RIVERS

in the Alabama region, and are separated by hundreds of miles in all other competitive sections.

It is not necessary to describe the vast iron deposits of Alabama and the cheapness with which they can be mined. There is no parallel in the world, except in distant inland sections, like that of Lake Superior, whence the ore has to be transported long distances to the centers of industry.

Thus, from the standpoint of assembling raw materials for the world's greatest universal staples of clothing and construction, Alabama must be conceded the very first place in the United States and in the world at large.

The second factor in cheapness of production is the availability of power. Power may be divided into two classes: that derived from oil, coal or gas, and that derived from water power. The coal deposits of Alabama are among the largest and most accessible of all the coal deposits of the world, covering an area of over 4,000 square miles. The thickness of the coal ranges from 50 feet down; over 300

square miles have an available thickness of 30 feet or more; 350 square miles a thickness of 20 to 30 feet; 600 square miles a thickness of 10 to 20 feet; and large areas from 2 to 10 feet.

It is difficult to estimate the total available tonnage, but it can be stated to exceed 75,000,000,000 tons, of which less than one-half of one per cent. has been mined. Nearly all of this coal is of good coking quality. Specimens from the mines of Belle Ellen, Blocton and Pratt City, which have been analyzed by the Government, show an unusually large percentage of fixed carbon, with an unusually small percentage of ash, moisture, sulphur and other impurities, giving an extraordinarily high calorific rating, exceeding 14,000 British thermal units. Natural gas of an unusually high grade is found in great volume in this region, and every indication points to oil deposits also. Therefore, in these sources of power Alabama cannot be put in the second place to any other section.

In the resource of water power this region stands almost unparalleled in the

whole world. Mussel Shoals alone will supply not less than 100,000 horse-power, and the tributaries of the Tennessee above Mussel Shoals will probably furnish as much more. *Rivalling the Tennessee is the Coosa River, with 200,000 horse-power available. Next to these two come the water powers of the Warrior River, notably that planned for Lock 17, a short distance from Birmingham. With high-potential transmission, the water powers of the Tennessee, Coosa and Warrior are available for this whole region.

Taking account of both sources of power, which react advantageously on each other, this region stands without rival anywhere in the world, while the great raw materials are on the spot. Coal and water power are located in the cotton field and alongside the iron mine, a combination which has never been even approximated, and apparently never can be approximated, anywhere else. Cheap water transportation for ore on the Great Lakes can never overcome Alabama's in-

*These figures, which are much smaller than published estimates, are those given by the U. S. Engineers for a dependable power throughout the year. The available power can be greatly increased by the use of reservoirs.

herent advantage. Both in assembling the raw materials and in supplying the power for their manufacture—the two factors in cheapness of production—the waterway region of Alabama stands supreme. I do not think that anyone who looks into the question will seriously challenge my statement that the conditions for ultimate cheapness of production for the great world staples place Alabama in a class by itself and unparalleled anywhere in the world.

The other great factor in winning the markets of the whole world will be cheapness of transportation from the centers of production to tidewater, and from tidewater to the markets of the world. In the fierce competition that will result the inherent advantages of water transportation over land transportation will be a determining factor; water transportation uses a level, almost frictionless fluid of great weight, and does not involve the comparatively heavy friction of solids on solids. For heavy transportation, therefore, water must always offer an inherent advantage.

The question of transportation from



Overbey's Studio

WHEN ALL MOBILE MAKES MERRY—AT MARDI GRAS

THE CARNIVAL SPIRIT TAKES A STRONG HOLD UPON THE FAIR CITY ON THE GULF

tidewater to the markets of the world gives a great advantage to the Alabama section. With the completion of the Panama Canal the center of distribution of world staples will soon shift from the English Channel to the Caribbean Sea. Alabama will thus have tidewater outlets closer to the center of distribution than any other competitive center of production. Her advantage, however, will come in the cheapness of transportation from her centers of production to tidewater. There is no comparison with those distant

has appropriated almost \$9,000,000 toward this work, and 16 locks have been completed. With the completion of Lock 17, work on which is already begun, slack-water navigation will be extended to within a few miles of Birmingham, and I hope that, before long, it will reach the city itself. The Birmingham region may now start upon the realization of its destiny, which is to make supreme its reign over the foreign commerce of the world.

The development of the Coosa River is still backward, but it is now receiving the



THE ONLY ONE OF ITS KIND IN THE UNITED STATES

WHARF AND WAREHOUSE OWNED AND OPERATED BY THE CITY OF MONTGOMERY, ALA. THE "KANGAROO PLATFORM" RISES AND FALLS WITH THE STAGE OF THE RIVER AND THE CARS ARE OPERATED BY ELECTRICITY

inland centers which at present supply the home market. The Alabama centers are located close to tidewater to begin with, and will have the benefit of water transportation for even the short distance that intervenes. The Alabama, Tombigbee, Warrior and Coosa Rivers will insure slack-water navigation straight from the centers of production to tidewater. Next to these will be the Tennessee River, which should have an outlet to the Gulf by way of one of the three rivers mentioned—the Tombigbee, Warrior or Coosa—as well as by the Mississippi.

The development of navigation on the Warrior River is now largely an accomplished fact. The Federal Government

attention of the Government. The development of the Tennessee River has long been under consideration. This year's Rivers and Harbors bill carries an appropriation of \$1,105,000 for the Tennessee River and \$1,338,500 for the Black Warrior, Warrior and Tombigbee Rivers.

Since these waterways are so intimately associated with the future of American supremacy in the world's markets, they should receive full and immediate consideration by Congress. The Panama Canal is so near completion that the world's struggle for the markets of South America and the Pacific is almost upon us. Our present largest centers of industry—the Pittsburgh-Cleveland-Chicago re-



EVERY LOCK ON THE COOSA RIVER MARKS A NEW STAGE OF NATURAL BEAUTY
THE VISTA FROM THIS POINT SHOWS A REACH OF WATER, ROLLING HILLS TOPPED WITH EVERGREEN—IT IS A VIEW
TYPICAL OF PICTURESQUE AMERICA

gion—are advantageously located for the home market, but it is of the utmost national importance that the Alabama centers should be speedily developed as we enter the struggle for the markets of the world.

It is an interesting fact that the development of navigation on all three of these great streams goes hand in hand with the development of vast water powers. Their development, therefore, should be undertaken along the lines of a wise, permanent, national policy, comprising both navigation and water power, and the Alabama waterways should bring about the stand-

ardization of our national policy for navigable streams.

The recent appropriation for Lock 17 on the Warrior River provides for the acquisition of a site for future development of power, and secures to the Government the full title and riparian rights in that locality. Henceforward it would be a wise policy for the Government to secure such title and riparian rights, and provide sites for power plants in all cases where the development of large power is involved in improvements for navigation.

In view of the fact that the whole question is rapidly becoming acute in all sections of the country, the time is ripe for establishing the principles under which the States should act in the case of waterways not navigable, and under which the Federal Government should act in the case of navigable streams; also, under which the Federal Government and States should jointly act in the latter case, and under which private individuals should act in conjunction



CANAL AT MUSSEL SHOALS ON THE TENNESSEE RIVER



UNIVERSITY OF ALABAMA
SOME OF THE BUILDINGS AROUND THE QUADRANGLE. THE CAMPUS OVERLOOKS TUSCALOOSA AND THE WARRIOR VALLEY

with one or the other or both of these governments. It is time to establish by law a Federal Commission on Public Works and Conservation, or, at least, a bureau on these questions in the Department of the Interior.

Any permanent policy should take account of the following principles:

First, it is not wise for the Government to go into the system of production or the system of distribution, but it should confine itself chiefly to the system of regulation, such differentiation being in line with the evolution of all living organisms of a high type. It is when the Government is free from the burdens of production and distribution proper that it can best fulfill the important and vital function of regulation.

Second, it should be borne in mind that water, like natural light and air, belongs to the people at large and should not be monopolized for individual benefit. Every policy of common law or statute law should insure the ultimate public good, and at the same time protect the people in their property rights.

And third, the Federal Government, without violating the principle first laid

down, can and should encourage the development of natural resources, particularly the water powers which are so intimately associated with the development of navigation. We should establish a uniform policy of cooperation between the Federal Government, the State government and corporations and individuals, in this development, the general principle being government aid with reasonable regulation, and with the refunding, from the earnings of the improvements, of the original expenditure. I am inclined to think that to enable the people to proceed without having to wait upon large corporations, we could very properly provide a large Federal fund for cooperating in power development on navigable streams along the general lines of the irrigation fund, which would never be exhausted and would be available for projects in the order of their importance as recommended by proper government officers, or by the bureau or commission referred to, after its establishment.

I cannot help adding a word of recommendation to young men seeking an outlet for their energies to go to Alabama and locate along these three great streams



SMITH HALL—GEOLOGICAL MUSEUM

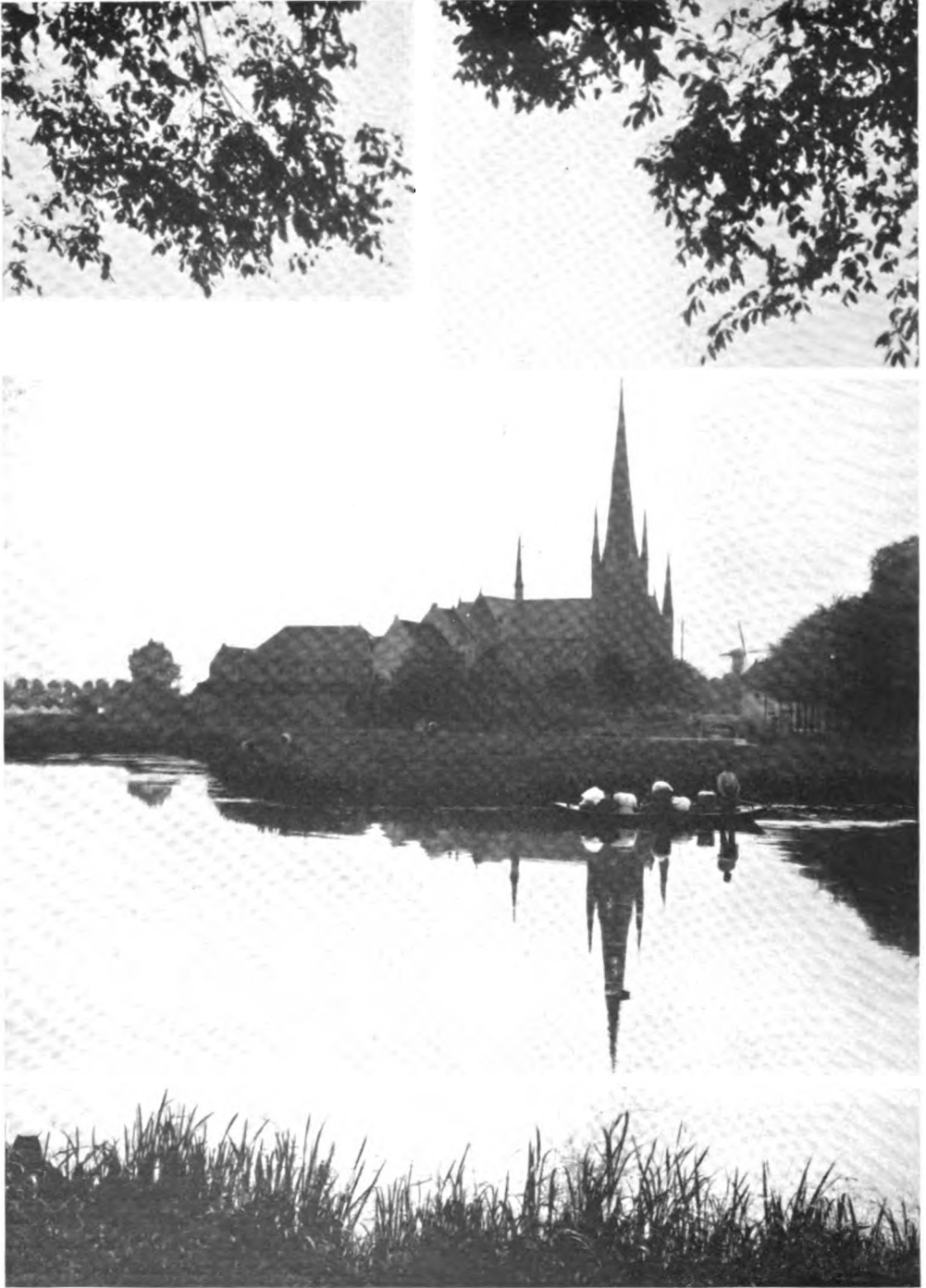
REMARKABLY COMPLETE IS THE REPRESENTATION OF AMERICANA IN THE STATE MUSEUM AT THE UNIVERSITY AT TUSCALOOSA

within a reasonable distance of their water power and navigation, because the attention of the whole country and the whole world will soon be directed to this region, following the completion of the Panama Canal. When once the world's attention is so directed, the unparalleled advantages for cheap production through the proximity of raw materials in vast abundance and of coal and water power in unlimited store, lying close to tidewater and with water transportation all the way to the markets of the world, will cause a development of industry and an enhancement of values so rapid that even the records of growth in the Pittsburgh, Cleveland and Chicago sections will be far surpassed. In the matter of land values for farming purposes there will be a similar advance. Lands capable of the highest forms of production are now obtainable for a "song"—lands suitable not only for the raising of cotton, but also for corn, forage, live stock, including hogs and cattle, poultry, dairy products, garden truck and fruits.

I would not undertake to name all of the promising points for location and investment, for almost all parts of Alabama would be good for investment at present

values, but along the three waterways I might mention, as now ready for young men's energy, the following: near the Tennessee River, Guntersville, Huntsville, Decatur, Athens, Florence, Sheffield and Tuscumbia; along the Coosa and Alabama, Gadsden, Anniston, Attalla, Talladega, Childersburg, Wetumpka, Tallassee, Montgomery and Selma; and along the Warrior and Tombigbee Rivers, Birmingham, Bessemer, Jasper, Cordova, Tuscaloosa, Eutaw, Demopolis and Mobile.

Some day I expect to see the banks of the Tennessee River one solid city for seventy-five miles up and down on both sides, in the vicinity of Mussel Shoals. Likewise, I expect to see Gadsden the center of industry for many miles around. I expect to see the region from Birmingham to Jasper and from Birmingham to Tuscaloosa built up like the region about Pittsburgh, while prosperous cities will spring up at short intervals all the way down the Warrior River. I expect some day to see Mobile the greatest shipping port in America, since it is the natural outlet to tidewater of the Alabama region, which is destined to give America the commercial supremacy of the world.



"WOERDEN. * * * ONCE COVETED BY HOLLAND'S COUNTS AND UTRECHT'S BISHOPS

Peaceful and pleasant it lies in the midst of smiling meadows. Bonifacius, the great missionary bishop, lived here for seven years before he went to Døkkum to die at the hands of Frisians, and Woerden, among all her grim stories, and they are many and terrible, keeps his memory green.

THE ELUSIVE DUTCH RHINE

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

"THE Rhine—the Old Rhine it is now—flows on from Utrecht even more slowly through the flat meadows which mark the western end of the province and cover all of Holland. Just beyond the boundary it cuts through Woerden, a pretty little ancient town once greedily coveted by Holland's counts and Utrecht's bishops." Thus does this gifted writer pursue her quest of the final outlet of the river of glorious tradition, with an artist's observation of the manifold beauties of the country passed.

IN THREE PARTS—PART II

WE came to Arnhem in the late afternoon of a market day. A mellow light enveloped its stately houses, swirled about its church towers, glimmered in the dusky market-place, made a golden glory of the river. Arnhem at that hour was picturesque, even poetic. At other times one is much more conscious of wealth, luxury, leisure than of poetry. The show-city of the Netherlands she is, residence of retired merchant princes graciously expending their fortunes acquired in far-away Sumatra or near-by Rotterdam. The dusky faces of their Javanese servants give a curious Oriental note to the modern city, but, indeed, in every town in the Netherlands there is something in architecture, in pottery, in the pattern of ancient silver or the clasp of a coral necklace which recalls the great Dutch trading companies and their supremacy on Eastern seas.

Upon this warm afternoon of mid-summer, however, Arnhem's prosperity is less oppressive; her wide, well-paved streets are scrupulously clean but empty, the great houses are shuttered, their owners have gone with their dark-skinned servants to the rose-wreathed villas on the hills or to Scheveningen's sea-wall. The theatres are closed, the music-halls silent, the "honk" of an automobile, the "chug-chug" of a motor-boat are heard but rarely; there is nothing to remind one that, amid its neighbors, Arnhem is the gayest of the gay.



Rolfe

The market-people are methodically dismantling their booths and loading their carts for the homeward journey. Their placid faces, their leisurely movements proclaim content with the day's business and serene confidence in the long summer twilight that shall light them home. Like Arnhem, they look prosperous, well-fed, contented with themselves and all that concerns them; the traveller has no anxieties about them,

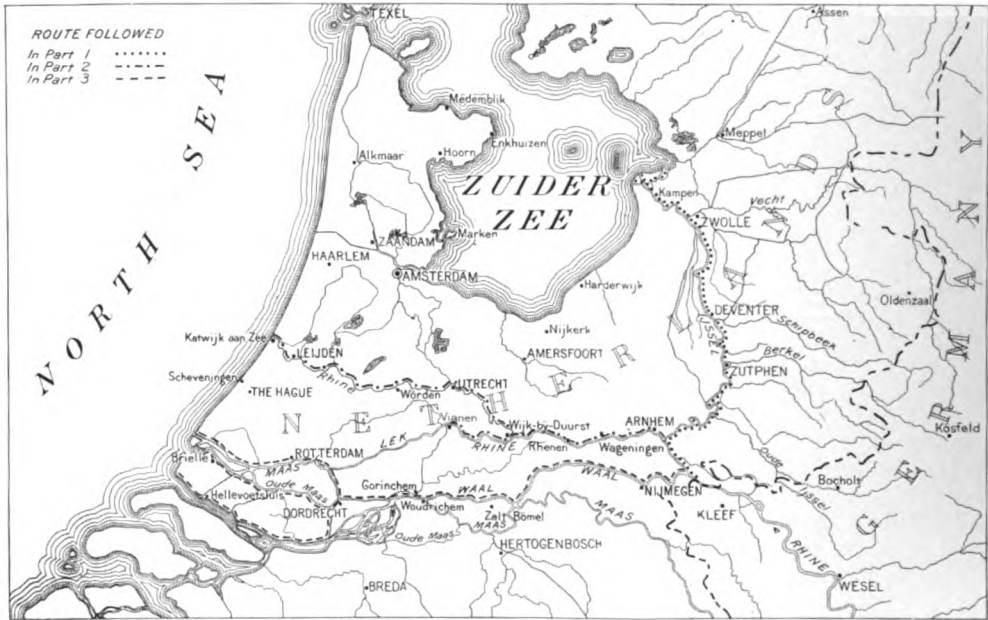
nor great interest.

But Arnhem has not always basked thus in cradling golden light. The capital of Guelderland, the chosen residence of its ever-warring dukes, it proudly claimed the province's motto as its own:

Hoog van Moed,
Klein van Goed,
Een Zwaard in de Hand
Is t' wapen van Gelderland.
(High in courage,
Small in wealth,
A sword in the hand
Is the shield of Guelderland.)

and played its part in many a hard-won fight.

Grown rich, peaceful and prosperous, it has forgotten all that, torn down the ancient dwellings that might recall her days of poverty and strife, buried her memories for good or ill. She will tell you none of them, you must dig them up for yourself. She may have been a Roman camp—almost all Rhine towns claim that—but there are no Roman remains here. In fact there is nothing older than seven



THE RHINE—A RIVER OF MANY MOUTHS

Not less mysterious than the famous Humboldt River in our own Nevada is the storied Rhine in its final outflow to the North Sea. We know that the Humboldt, after its sulky, sluggish flow past Winnemucca, makes a cowardly surrender to the arid desertland and sinks into the earth whence it sprang. But "The Elusive Dutch Rhine" shames its noble Teutonic parentage and sinks from the sight of man to find any number of doubtful outlets to the sea.

centuries, which, for America, is indeed ancient but, for the Rhine, is young. The Sabelpoort, last of her gates, stands at one end of the market-place, interesting but far less beautiful than those we saw at Kampen and Zwolle. Across the great square the stately church of St. Eusebius presents much the same front to the world that it did when Guelderland's last Duke was buried there four centuries ago. Of brick, weathered to a beautiful purplish tone, and of sandstone too recently and thoroughly restored, the church is pleasant to the eye, while in its tall graceful tower swing bells whose chime delights the ear. "Ach ja!" says our Dutch friend "by Hemony." We, of America, know little of bells and bell-makers, but all the Lowlands, the home of silvery chimes, can tell you about the brothers Hemony, who, in the seventeenth century, cast unequalled bells that ring yet sweet and true.

East of the church is the Stadhuis—or so Arnhem has called it for almost a century—but for us, and for many another, it is still the Duivelshuis, the palace of Maarten van Rossum, Lord of Ponderoy, general under Duke Charles of Gueldres. An unscrupulous soldier of fortune always,

carrying pillage and death across the Netherlands, he yet was a patron of architecture who built fine houses in fair cities upon his devastating route. This one at Arnhem, where indeed he lived very seldom, newly restored until it looks a thing of yesterday, earned its popular title not, as one might suppose, from the harsh soldier himself, but from the caryatides with which his grotesque fancy adorned it. They look mightily uncomfortable—about as much so as all of Maarten van Rossum's neighbors.

Another ancient church, a few relics in the museum, that is all that lingers of Arnhem's ancient memories. There are comfortable modern hotels where one may live in luxury; there are delightful excursions by carriage or motor-car through the pretty low hills and forests beyond; there are hospitable villas and parks and gardens whose gates open readily to strangers and "points of view" a-plenty, whence one can see the rippling golden river, a chateau or two, a picturesque church; there are luxurious boats for merry water-parties; but the wind at Arnhem, soft as it is, rose-scented, whispers no stirring history, no romance; the



"THE DUIVELSHUIS, THE PALACE OF THAT MAARKEN-VON-ROSSUM WHO CARRIED PILLAGE AND DEATH OVER THE NETHERLANDS"

Neder-Rijn as it ripples its lullaby by Arnhem quays has quite forgotten the Lorelei's song. It is our own fault or misfortune perhaps, but Arnhem can never long hold us; in less than a day we are on our way to Wageningen and Rhenen.

If tired of boats one may go to Wageningen by tramcar, an indifferent car which meanders methodically through the chain of summer villages, the endless rows of rose-wreathed houses, of greenest lawns and pebbliest walks and densest trees that crown the low hills which here line the river. From it the passenger has frequent glimpses of intimate family life as the car skirts a window or rounds a rustic arbor where Mynheer, Mevrouw and their guests sit about the coffee-urn. One feels embarrassed, as if one had peeped through a keyhole, but there is no need. Mynheer smokes his long pipe or munches his strawberry sandwich, Mevrouw her Arnhem *meisje** placidly; the tramcar and its occupants are accepted as phlegmatically as a passing shower. Some things must be—as mosquitoes—or tourists.

Wageningen is very ancient but, like Arnhem, does not look it. In fact she is so much interested in her present, her new

schools, her forests, the sand slopes where she sits high above the river, that she has no time to consider her past. Of grim war-stories she has plenty, but she tells them reluctantly and, as we were but lukewarm listeners to her chant of self-praise, we soon parted company with mutual content.

Now Rhenen is a vastly different place. Unfortunately we came to it on a day of incessant rain. The beautiful tall tower of St. Kunera's church, ordinarily a landmark to boatmen far up and down the Neder-Rijn, emerged from the clouds reluctantly only as we came to its foot, and the smoke wreaths from the chimneys of the little town that lay hidden behind the green wall blended with the swirls of mist about it, draping it in a succession of silvery veils. The luxuriant green meadows between river and dijk were spongy with water; within, the little town dripped and trickled with rain; nevertheless it was picturesque in its pearly grayness with, here and there, a scarlet flower or a blue blouse to touch color to the monotone.

Rhenen is quaint and old-fashioned and contented, guiltless of modern improvements and of modern unrest. It has time for the stranger, who comes indeed but



"THE INNER HARBOR, ARNHEM: THERE IS MUCH LIFE AND MOVEMENT UPON HER WHOLE WATERFRONT"

*Arnhem's especial confection.

rarely, and memory, the memory of the very old for the days when they were young. It can tell many tales, but chiefest among them is the one concerning her church tower—history Rhenen calls it—and possibly with truth. But since a cold-hearted Frenchman proved that the Maid of Orleans never was burned at Rouen but "married and lived happily ever after," one grows doubtful of history and legend and of martyrs generally.



"RHENEN: THE BEAUTIFUL TALL TOWER OF ST. KUNERA'S CHURCH EMERGED FROM THE CLOUDS RELUCTANTLY"

Vondel, Holland's great poet, sang Rhenen's story, and to those who read Dutch, I commend the original. For the others the tale runs, baldly and briefly, thus: Kunera, the King of the Orkneys' daughter, and, of course, a princess lovely beyond compare, followed Ursula and her eleven thousand virgins up the Rhine toward Rome. Now, I shall not enter upon the story of that pilgrimage here. I know it has doubters; what good story has not? Perhaps the ancient text was read incorrectly; perhaps the maidens were but two, not thousands; perhaps the bones were those of men, of sheep, not girls; perhaps

—but all that belongs to the German Rhine and to Cologne.

No one disputes that there were at least two maidens and, if Cologne is sure of Ursula, Rhenen is equally certain of Kunera. In the slaughter which overtook them Kunera was captured by the heathen warrior, Prince Haymo, and he, enraptured by her lovely face, forebore to kill, but carried her off to Haymostein, near Rhenen. There she had the choice of marrying him or of remaining a prisoner for life. Kunera declined both propositions, flung herself from her tower window and died on the court-yard stones. Whether Haymo, repentant, gathered her bones and enshrined them, whether he became a Christian, where and how he died, the story does not tell, but it ought. At Cologne they would have rounded it out perfectly, but the lower Rijn has no imagination. Kunera had been a thousand years dead when this lovely tower rose in her memory.

We are going down the river from Rhenen to Wijk bij-Duurstede. The current is running swiftly and the steamer slips past the pier, turns and laboriously puffs upstream again to make its landing. As we wait we can watch the queer, crab-like ferry-boat which is sidling across the river towards us with a flock of sheep that are to be our fellow-passengers. This ferry uses the current for all propelling power; up and down stream you will find it like again and again. Anchored securely in mid-stream is a heavy chain which a series of three or four small boats keeps afloat. The flat, square-ended ferry-boat, set on at right angles to the free end of this chain, swings upon it from shore to shore like a square bob on a flexible pendulum rod. The ferryman pushes off at such angle as best suits the current, and "lets it do the rest." It is amazing how swiftly the awkward boat moves. One realizes what this river must be in time of spring-floods, and the pretty green banks, which increase in height as the hills flatten down beyond Rhenen, command more respect and attention.

Besides the two score sheep which are our constant companions, we have horses, cows, pigs, coming and going more or less reluctantly at every port. There is nothing much funnier for the disinterested observer than a tussle with a refractory



"A FERRYBOAT ON THE RIJN NEAR RHENEN; UP AND DOWN STREAM YOU WILL FIND ITS LIKE"

pig; the whole crew, from captain and purser to engineer-stoker, and all the second-class passengers take a hand. It is the perquisite of a first-class passage to look on. Arnhem would have stared at us aghast or not noticed us at all, arriving in such company. She is new (comparatively) and consequently over-careful of appearances. Wijk—just as aristocratic in her way, which is that of a British dowager sublimely conscious that she is she and indifferent to all else—made us just as calmly welcome as she would if we came on foot or in a palatial yacht; she is neither elated nor depressed by our advent.

Here at Wijk the river branches once again, sending out the Kromme Rijn northward by Utrecht to Leiden and Katwijk, while the other and stronger arm goes off past Vianen and Vreeswijk to become the Lek at Schoonhoven, and eventually reach the Maas and Rotterdam. In earlier days the Kromme Rijn was the main stream, the true continuation of the river, and freight-boats from the upper Rhine came down to turn here at Wijk toward Utrecht and Leiden. But the river-mouth at Katwijk silted up, the river became unnavigable, the tide of trade turned from the Neder-Rijn to the Waal, the Rhine's southern branch that we left beyond Arnhem, but to which we must return. Shall we follow now the Lek or the Kromme Rijn?

The Lek, once a weak, wavering Rhine

arm, is to-day a great river, bound at Vreeswijk locks to the great Amsterdamer canal. Is it possible that some drops of Rhine water filter through here to reach the Venice of the North? If we begin to follow now every contributing current we shall be involved in a labyrinth of waterways and our journey will never end. The engineer will wish to see the great Vreeswijk locks, the boat-bridge between the towns; the artist will prefer Vianen, the tiny old picturesque town of the Brederode, older perhaps than Wijk. Schoonhoven, too, a border town between Utrecht province and Holland and often stoutly contested, beckons invitingly, but we will resist the call to-day and follow the name as we elected.

But before we go let us look at Wijk for a little. An old castle (the Dorestadum of the Romans, hence Wijk's present name) is here, and a church with huge unfinished tower; a maze of winding streets, of low-gabled houses, whose windows are screened by close-clipped lindens crowding jealously close to the lace curtains, upon the roofs grave-eyed storks solemnly regarding the strangers. There is nothing to suggest war or war's alarms, yet Wijk has had them in plenty. Romans built the first castle here; Kasteel, Wijk calls it. Frank and Fries fought for it, Louis the Pious gave it to Heriold, King of the Danes, as a reward for Christian baptism. The Normans held it next and then a succession of nobles wrested it in turn from each other; for



"THE FERRY AT RHENEN: THE FLAT, SQUARE-ENDED BOAT THAT SWINGS AT RIGHT ANGLES TO THE END OF THIS CHAIN"



"ON THE WEERD-SINGEL AT UTRECHT"

PART OF HER OLD MOAT NOW TURNED INTO A CANAL—SO ANCIENT HOLLAND COMBINES THE PICTURESQUE AND THE PRACTICAL
IN THE UTILIZATION OF THE WATERWAYS THAT HAVE CONTRIBUTED TO HER PROSPERITY



"UTRECHT, EVER-CHARMING"

"EVERY TRAVELLER TO THE NETHERLANDS KNOWS THE OLD EPISCOPAL CITY, WITH THE TALL, IMPRESSIVE TOWER AND THE BEAUTIFUL BELLS, THE DEEP CANALS WITH THEIR DOUBLE QUAYS FRINGED BY HIGH GRAVE HOUSES."



"WOERDEN, A PRETTY LITTLE ACTIVE TOWN WITH ITS CLEAN STREETS AND ROWS OF TINY HOUSES"

two hundred years the Bishop of Utrecht claimed it and, with the province, they gave it in 1528 to Charles V. Since then Wijk has been one of those happy towns that has no history.

The days of her glory were those of her Bishops. They restored the castle, built the great church of St. Johannes-de-Dooper (John the Baptist) and began its tower. Ann Radcliffe, journeying by waterways across the Netherlands a century ago, writes of the "shattered tower of this church, a monument of the desolation spread by the Spaniards." The Spaniards have enough on their shoulders; don't let us add the church tower. The Bishops' money gave out, a less picturesque but quite usual story. Between church and castle there are two paths, one an avenue known as the Mazijk (music), whereon the bishop went to prayers preceded by music and song, the other underground. Now any reasonably imaginative town could have a story to tell of one or both of these roads, but Wijk has none, wherefore let us go on speedily to Utrecht, which in another way is as picturesque and vastly more entertaining. Yet we must not leave Wijk too abruptly. Ruisdael loved the old town and painted here often. A mill still stands where the Rijn and Lek divide, a mill yet known as the Rijn-en-Lek in memory of the one so frequently in his pictures. In the springtime when her fruit-trees blossom, in the summer when her cherries ripen, the old town is delicately lovely, even gay; for Kermis

she awakens to an old-fashioned, somewhat clumsy merriment that is not, to us, attractive, but always she has a tinge of gray melancholy, a gentle dignity that adds to her charm.

The Kromme Rijn was a favorite waterway in the days of the *trekschuit*, the manpower boat of Netherland canals, but with the building of the locks at Vreeswijk, its popularity waned. No steamers to-day follow its tortuous course, no regular service is there of even most primitive kind. One may hire a small boat for the voyage or follow the river a-foot along the dike which walls it in. The steamers reach Utrecht by way of Vreeswijk locks and the canal, but did we choose them we might be tempted by the Holland Ijssel, a stream which should know nothing of the Rhine, although I doubt not more than a trace has filtered through.

From Utrecht's walls the stream goes on westward as the Old Rhine to Leiden and Katwijk, but one arm, the Vecht, runs northward to Muiden and the Zuyder Zee. Muiden's old castle is well worth a visit, but we have already listened to its stories, and as soon as Utrecht will permit it we shall go on with the Old Rhine to its end.

But Utrecht, although often visited, is ever charming. Every traveller to the Netherlands knows the old episcopal city with the tall impressive tower and the beautiful bells, the deep canals with their double quays fringed by high, grave houses, the picturesque bridges, the fragmentary cathedral, the once-great univer-



THE DEVIL'S STONE AT UTRECHT BESIDE THE OUDE GRACHT A HUGE BOULDER IS SECURELY CHAINED TO THE WALL

sity, the rows of mansions, each with its own gateway and bridge, the ring of beautiful parks and moats. The history of a city long so famous needs no repetition, but a story concerning a great boulder on the quay is worth repeating at the risk of being a twice-told tale. It is chained securely to the wall at the corner of Groot Eligensteeg beside the Oude Gracht. Archæologists name it a Keltic sacrificial stone or the table of an ancient dolmen, of similar origin to the Amersfoort Kei and the Scandinavian boulders in the

water, consecrated by "bell, book and candle" and the stone fastened with it securely to the wall. That settled it. "Baas" and Klaas returned the following night, as usual. Utrecht, shivering under its feathers, in fear and hope, heard a wild shriek of rage; Satan had touched the sanctified stone and sprung howling into the *gracht*. Presumably the Rhine carried him far away, but Utrecht keeps the stone safely chained to this day.

The Rhine—the Old Rhine it is now—flows on from Utrecht ever more slowly



"THE TRUE HOLLAND LANDSCAPE"

"THE GREENEST OF FIELDS PLAID BY RIBBONS OF BLUE WATER, TENANTED BY BLACK-AND-WHITE COWS, DOTTED BY BROWN, THATCHED WINDMILLS—A LANDSCAPE BRIGHT IN COLOR, MONOTONOUS IN COMPOSITION, BATHED IN LIQUID LIGHT"

Drenthe Hunnebedden. Utrecht can spin a better yarn than that.

Long ago it was the custom of Jonker Satan and Knecht Klaas (Master Satan and servant Klaas or Nicholas) to play tennis or hand-ball with this boulder across bridges and moats. Night after night for hours dwellers along the *gracht* would hear deep uncanny voices bellowing "Gooi, Baas!" (throw, boss!) "Vang, Klaas!" (Catch, Klaas!) until sleep became a thing unknown. They thought and they thought of ways to outwit the devil. They hid the stone again and again, but always he found it and the noise began. Finally they called upon the church for aid, which, of course, is what they should have done at first. A stout chain was taken to the priest, bedewed with holy

water through the flat meadows which mark the western end of the province and cover all of Holland. Just beyond the boundary it cuts through Woerden, a pretty little ancient town once greedily coveted by Holland's counts and Utrecht's bishops.

Woerden's *grachten* are arched by high-curved bridges quite Venetian in effect, especially if one sees them in the soft sunset light that transfigures prosaic details and mellows colors to a radiant whole. The Stadhuis is a quaint little building now some four centuries old, but "young for its age." Before it is a tall stone pillory with chains still suggestively dangling as if used but yesterday. Within are two Roman millstones, found in the Rhine and thought to have been used by Bonifacius in the defences he built for the

town. The great missionary bishop lived here for seven years before he went to the Dokkum to die at the hands of the Frisians, and Woerden, among all her grim stories, and they are many and terrible, keeps his memory green.

No reminder to-day is there of martyrs or sieges, no sound of war or of far-caught battle-cry. Peaceful and pleasant it lies in the midst of smiling meadows all cattle-dotted; many little boats sail to and from it, high piled with white meal-sacks, with glistening copper milk-cans; round about are sunshine and summer breeze.

Between it and Leiden are many little villages and illimitable green meadows stretching to a horizon broken only by a church spire or a towering mill. Here is the true Holland landscape, the greenest of fields plaided by ribbons of blue waters, tenanted by black-and-white cows, dotted by red-roofed, tree-screened farm houses and brown thatched windmills. It is ever the same and ever charming, a landscape bright in color, monotonous in composition, bathed in liquid light, arched by an ever-changing sky.

By Nieuwebrug, by Bodegraven, Koudekerk the Oude Rijn creeps on to Leiden. This is the stream denied all right to the name, yet the only one that carries it to the sea. It has grown very old and forgetful. It whispers no tales of romance, it chants no legends, it sings no ballads; it is half ashamed since its name has been discredited, and would not now tell what it heard once at Bingen, even if it remembered, which I doubt.

And Holland would not listen if it did. Legend does not thrive upon its sunny *polders*, and of war it has stories in plenty; every one of those tiny villages you pass can tell at least one. But what would you think of this, remembering Holland's con-



"THE STAD-TIMMERHUIS. (OLD CITY WOOD HOUSE)"

tempt for fiction? Fort Wierekerschans, near Nieuwebrug, can store 200,000 tons of powder. No one doubts it. But—powder that has grown damp elsewhere immediately dries when re-stored here. No one pretends to answer your "why."

The river glides on quietly and enters Leiden near the Zijlpoort, spreading into a great busy haven where boats come and go unceasingly. It creeps thence westward through the city between rows of lindens and pretty red-roofed houses. Beyond the Burcht, the old tower at the town's heart, it is joined by a broader current, the Nieuwe

Rijn (New Rhine), which left it just a little time ago to form a tiny island and comes up through the stateliest quarter of the city under the *Korenbeursbrug (the Cornmarket Bridge) and beside the weigh-house, to rejoin the elder stream. Thence they flow together through city and land to the sea. Schaffhausen's turbulent waters now close-locked and tamed by dikes and gates.

We may be prejudiced, but to our eyes the Rhine mirrors nothing prettier upon its long course than the roofs and towers of Leiden soaring from the lindens by its quays. On market morning, when scores of tiny boats, piled high with gay fruits and vegetables, float in on the current, and red-sailed *tjalcks* lie close to busy wharves, when the bells are ringing gaily from the Stadhuis tower and the Waag's tall doors are thrown wide to the white-jacketed porters, when a west wind kisses the water into a thousand frightened pouting little ripples and upon its breezes comes the salt tang of the sea, it is sweeter far to linger by Leiden's quays than to follow on to the river's end.

Yet its course from Leiden to Katwijk is also charming and too well-known to

*Illustrated in the previous issue.

demand a guide. And Katwijk itself—pretty little Katwijk with its shady streets filled with green coolness even in mid-summer, its rows of tiny houses, spick and span as toys newly come from a Nuremberg factory, their windows, doorknobs and mirrors ("spies," the Dutch call these reflectors) shining from much polishing—has been a joy to artists for at least forty years.

Which is the prettier, Katwijk-aan-Rijn or Katwijk-aan-Zee—two villages, a half-hour's walk apart, bearing the same name, each charming in its way, but with no resemblance? When the fishing boats come in the shore city calls us, but when the beach is full of bath-wagons and sand-chairs Katwijk-binnen pleases us far more.

Imbedded in the sand dunes which protect Holland's low *polders* from the sea, the two little villages have reason to watch both tide and river anxiously in the time of floods. The summer-city, which sits placidly upon the dune-crest when the sea is like a mirror, when the *polder* waters are low and the sea-breeze soft as a baby's kiss, knows nothing of the battle with the waters which every springtime brings to the little towns.

It was Louis Napoleon who insisted upon the building of the great locks and

sluices here by Katwijk-aan-Zee, the draining to the sea of all those waters which spread in unsalubrious lakes, pools and morass about Leiden. That once the Rhine poured a great portion of its waters into the ocean here there seems no reasonable doubt, and where the tides had choked the mouth with sand engineers set the great gates. When the wind blows strongly from the ocean, the waves hammer threateningly at them, the waters within shiver and threaten to overflow. When the outgoing tide carries away the sand the doors slowly open and let the flood to the sea.

And if the waters from the Rijnland *polder* become too decrepit, if their level remains lower than that of the sea at ebb, huge pumps lift the sluggish remnant from its bed to the ocean; the Rhine, at last, finds its way to the sea.

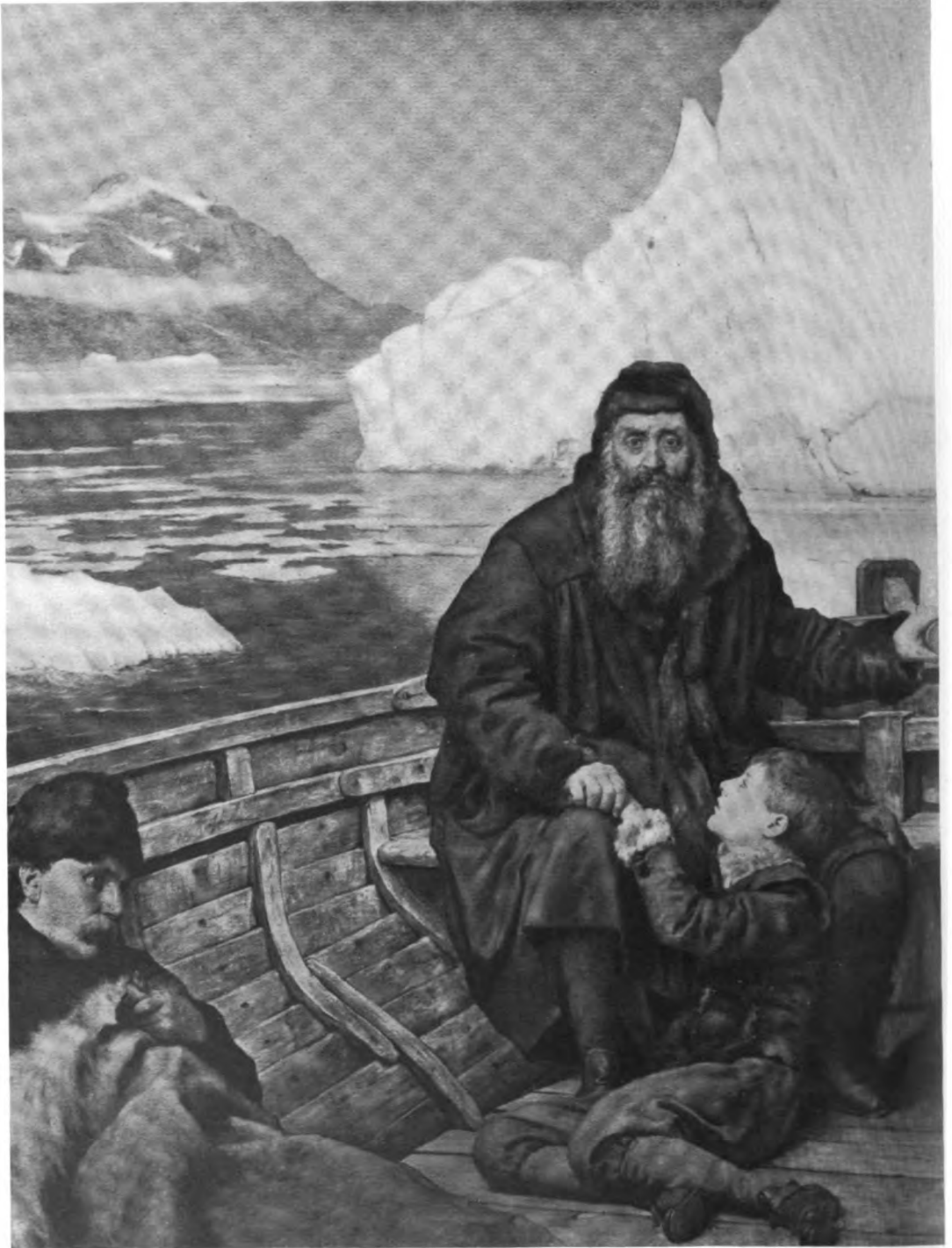
But is this truly the proud old Rhine at Katwijk? Many claim it is but *polder* water and call it the Katwijksche canal. Who knows? Let us go back to the first dividing of the waters there by Schenkenschans, where the Waal leaves the Rhine, and take up the southern trail.

EDITOR'S NOTE:—The next and concluding installment of Mrs. Albrecht's prose idyll, "The Elusive Dutch Rhine," will appear in the June issue of NATIONAL WATERWAYS, and, as promised, will treat the southern courses of the recalcitrant Rhine through the Netherlands.



KATWIJK-AAN-ZEE

"CLOSE BY THE SEASHORE VILLAGE THE OLD RHINE COMES TO ITS DEATH"



From the painting by John Collier, in the Tate Gallery

HENDRICK HUDSON CAST ADRIFT

With his young son and a few loyal members of his crew, the discoverer of the Hudson River was abandoned in an open boat by the mutineers of his ship, to perish in the icy expanse of Hudson's Bay, which, also, he had discovered. The surviving sailors afterward found their way out through Hudson Strait to the Atlantic without the aid of a compass, a fact which is pointed to as showing the ease with which the Strait may be navigated.

TO EUROPE VIA HUDSON'S BAY

By A STAFF WRITER

"IN THE working out of the Hudson's Bay project, and more especially in the economic necessity from which the magnificent undertaking springs, American energy, American initiative and American capital have been decidedly to the fore." The Canadian dream of half a century is to be realized in the railway that is rapidly being pushed to a terminus at Port Nelson, on Hudson's Bay, which the writer likens to some epic stroke of daring by heroes of Norse or Nibelung mythology.

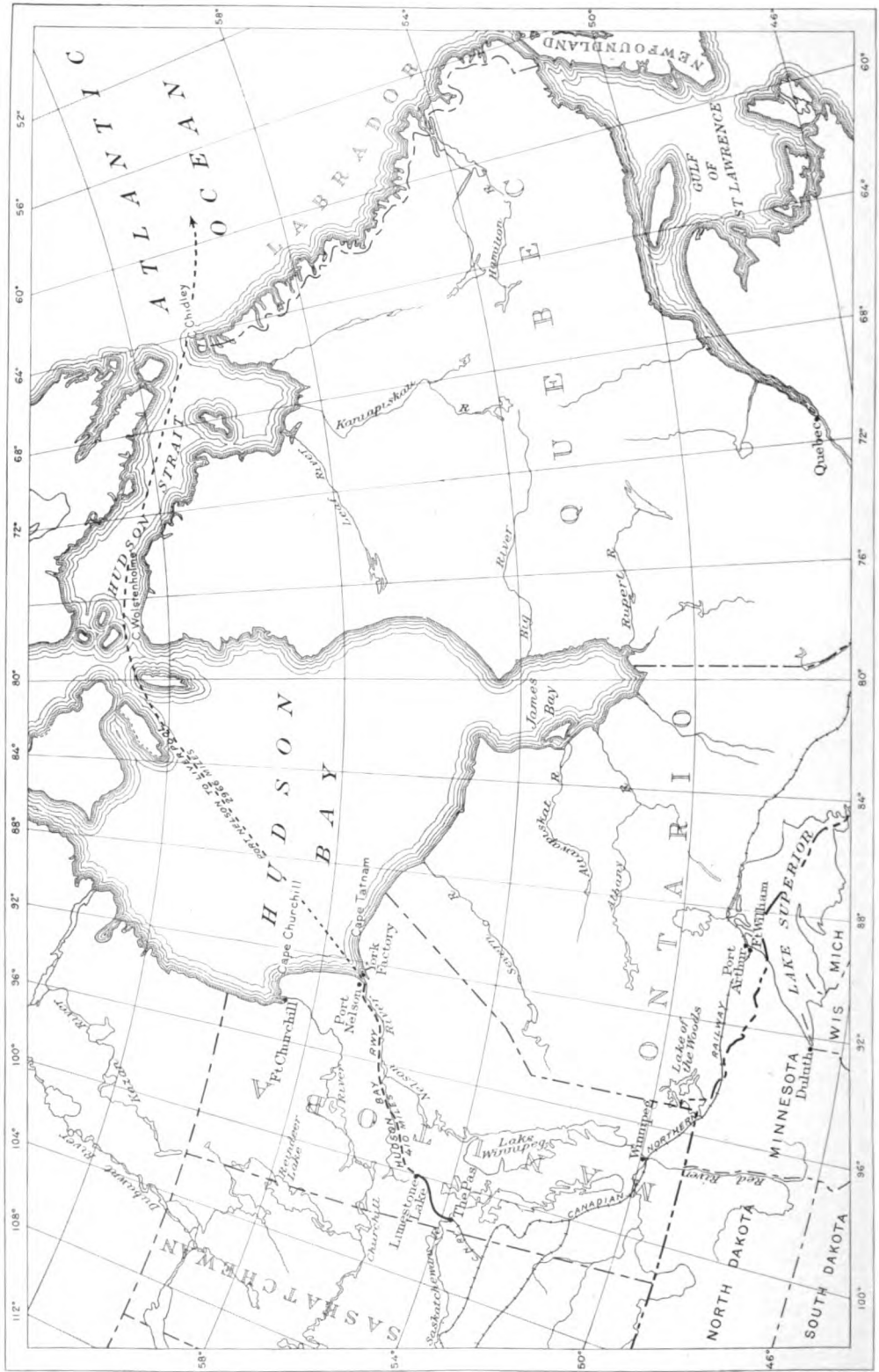
WHILE the attention of the Americas is focussed upon that supreme event, the coming union of the waters of the Atlantic and the Pacific at Panama, work is progressing, quietly, but none the less indefatigably, upon the opening of a commercial highway over the northernmost land and water reaches of this hemisphere that, ultimately, must enter into competition with the Panama Canal. For a distance of seventy-five miles northward from the starting-point at The Pas, a Canadian Northern Railway station just east of the boundary line separating the provinces of Manitoba and Saskatchewan, the tracks of the Hudson Bay Railway have been laid. Yet more than this has been accomplished. The concrete piers of a bridge by which the road will span the Saskatchewan River have been built and the steel frame-work and approaches all but completed. The laying of trackage for the remainder of the 410 miles which are to constitute the total length of the road, and the erection of two more bridges to span the Nelson River at Manitou Rapids and at a second crossing of that waterway, henceforth will be interrupted only by winter snows, until trains are in operation between the two termini, and grain and cattle and the produce of the great Northwest are put aboard trans-Atlantic freighters at Port Nelson, on Hudson's Bay.

Like some epic stroke of daring by heroes of Norse or Nibelung mythology seems this first step toward the realization of the Canadian dream of half a century. In setting about to open up the Hudson's Bay route the people of the Dominion have undertaken to bend the most ferocious of the elements—to harness, as it were, the very rigors of the North to the

will and pursuits of man. But when the railway shall have been completed, at a cost to the nation of \$25,000,000, and a definite route of navigation shall have been established from the terminus of the road to Liverpool, by way of Hudson's Bay, Hudson Strait and the Atlantic, the vast grain areas of the Canadian Northwest will be brought within a hauling distance of the great English market of approximately 3500 miles, or from 1350 to 1800 miles less than the shortest existing rail-and-lake routes through the ports of Montreal and New York. Funds for the construction of the railway, the building of terminals and grain elevators and the creation of a first-class seaport at Port Nelson are voted from year to year by the Dominion Parliament, among the appropriations for public works.

In the working out of the Hudson's Bay project, and, more especially, in the economic necessity from which the magnificent undertaking springs, American energy, American initiative and American capital have decidedly been to the fore, as, indeed, they have been in the evolution of the latter-day Canadian overland transportation systems. A representative example of these is the Grand Trunk Pacific Railway, now building to a tide-water outlet on the Pacific coast at Prince Rupert, B. C., from which grain cargoes will be despatched to Europe by way of the Panama Canal.

Twenty years ago the limitless stretches of the Canadian Northwest embraced a population of less than eighty thousand, but toward the close of the century an influx of settlers and farmers from the neighboring States south of the international boundary line set in, and this has since developed such formidable growth and



MAP SHOWING COMPLETED PORTION AND ADOPTED ROUTE OF THE HUDSON BAY RAILWAY

constancy as to be viewed with concern in this country. The immense territory is now peopled by hundreds of thousands of native Americans and is studded with thriving cities and towns that approach, in the beauty and spaciousness of their streets and avenues and in the substantial character of their hotels, churches, banks, theaters and public buildings, the proudest centers of the United States.

The rich granary of Manitoba, Saskatchewan and Alberta, blessed by the wonderful "Chinook," that warm wind which offsets the rigors of climate normal to the latitude of those provinces and makes possible a yield of forty bushels to the acre and a growth of grass seven feet high, has been developed to its present state of cultivation in the main by American immigrants. By reason of its swelling numbers and by the nature of its agrarian accomplishments, which have come to tax the capacity and the resources of the present trans-continental railway lines north and south of the border, this "Yankee" population has attained to the status of a powerful factor in the political and commercial destinies of the Dominion. And the launching of the Hudson's Bay project is a direct result of the influence exerted by this element, as a political entity, in the Canadian Parliament.

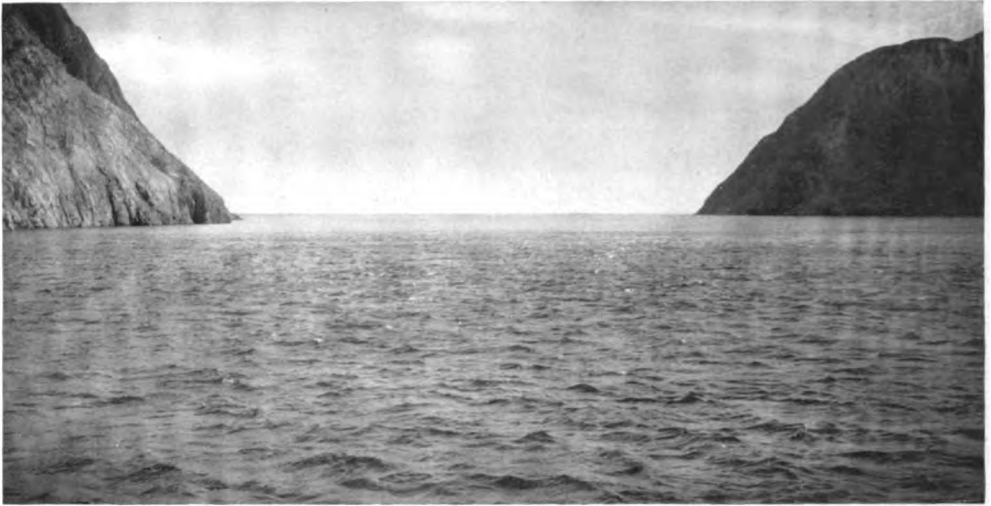
Building operations upon the railway line were begun considerably in advance of determination by the Canadian Minister of Railways and Canals, the Honorable Frank Cochrane, of the ultimate tide-water outlet to be reached. Start was made upon a section of 250 miles from The Pas to Split Lake, and the selection of one of two routes from that point onward was left to the Minister, who last summer made a tour of inspection of the entire country to be traversed by the 250-mile section already contracted for and by the two proposed extensions to the Bay. One of these would terminate at Port Nelson, at the mouth of the Nelson River and 160 miles from Split Lake; the other at Fort Churchill, 255 miles from Split Lake and two degrees farther north than Port Nelson on the forbidding western shore of the Bay. Not until the first blasts of snow-laden wind, heralding the approach of the winter just closed, bore down upon the construction force, was the final decision of Minister Cochrane in

favor of the route to Port Nelson announced and the contract for the total length of the road let to J. D. McArthur. The work of construction is being pushed to completion by an army of engineers under the direction of John Armstrong, chief engineer of the Hudson Bay Railway, who is immediately responsible to the Deputy Minister of Railways and Canals.

Over a trackless wilderness of stunted forest growth and morass, and creeks which broaden into extensive lakes, must roadbed and trestle be constructed to the townsite proposed for Port Nelson, on the clayey, bluff-protected north bank of the Nelson River, near the point where the waters of that stream enter Hudson's Bay. Where now the silence of this wasteland is broken only by the cry of marshbirds and the cold splash of swift-running rivers, the shriek of giant locomotives and the groan of heavy-laden freight cars will soon signalize the onward march of civilization into the hitherto uninhabited territory.

Unlike the railways operating in more temperate latitudes, the Hudson Bay Railway can be operated to its capacity for only two months, to a lessened extent for possibly three months, and still less for the remainder of the year. But during the interval in which it can be operated, the volume and importance of its dependable traffic dictate that it be operated to the maximum limit of its capacity—dictate that it be literally overworked.

In addition to the initial outlay of \$25,000,000 for the construction of the road, the sum of \$9,000,000 is to be expended for the equipment of the line to accommodate a traffic which, at the height of the season, is expected to attain to thirty-two freight trains and one express train every working day. This, it is figured, is about the limit of capacity for a single-track railway 410 miles long. Sixteen of the thirty-two freight trains, running north, will be loaded and will represent an aggregate traffic for one month of 1,930,000 tons, or 64,000,000 bushels of wheat. From 135 to 140 ships—a veritable fleet—will be required to carry these enormous cargoes from Port Nelson to Liverpool over reaches of the sea that have ever been associated with the frozen Arctic.

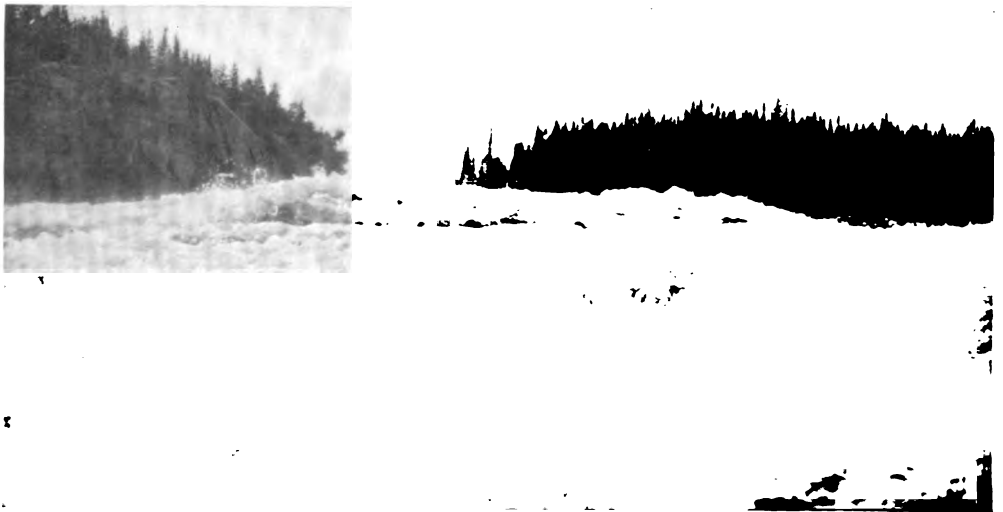


CAPE CHIDLEY AND RUNWAY INTO HUDSON STRAIT

GRAIN-LADEN SHIPS, ON THEIR VOYAGES FROM PORT NELSON, WILL ROUND THIS AUSTERE NORTHERNMOST HEADLAND ON THE ATLANTIC COAST. HERE THE DANGERS TO NAVIGATION OF THE BAY GIVE WAY TO THE LESSER HAZARD OF THE OPEN OCEAN

The ultimate success of the Hudson Bay Railway, as a transportation medium, must in great measure depend upon the maintenance of a free passage over that part of the course of shipping extending from Port Nelson to the Atlantic entrance to Hudson Strait. Of the maritime distance of 2966 miles to be covered by the steamships that will connect with the railway, about 1250 miles lie in the fairly

sheltered waters of Hudson's Bay and Hudson Strait. While work has been progressing upon the building of the railway, hydrographic surveys have been made in Hudson's Bay, under the direction of the Deputy Minister of the Canadian Naval Service, the Honorable G. J. Desbarats. As the first important step in this very necessary work efforts were concentrated upon the surveying of the



WHITE MUD FALLS, IN THE NELSON RIVER

MORE THAN 300,000 AVAILABLE HORSEPOWER IS PROVIDED BY THIS MAGNIFICENT CATARACT ON THE LINE OF THE RAILWAY, BUT ONE OF THE ABUNDANT PHYSICAL RESOURCES OF THE REGION

western shore of the Bay, off which, for six, seven and eight miles, there are known dangers to navigation. During the last season three separate corps were at work; one along the western shore, between Port Nelson and Fort Churchill, another in James Bay, and yet another securing information as to the variation of the magnetic needle.

Thus far the question of charting Hudson Strait has not been seriously taken up, because it is considered that there is water a-plenty there, and that the Strait is broad and deep enough to accommodate all manner of craft and an unlimited volume of shipping. The primary considera-

rounded by steamers upon their entrance to the Strait from Hudson's Bay. At the ocean entrance to the Strait is Cape Chidley, the northernmost point on the Atlantic coast of North America. There the division-line is drawn between the territory of Labrador, to the eastward, which is under Newfoundland jurisdiction, and the wild, little-explored plateau of Ungava, which lies between the Labrador boundary and the eastern shore of Hudson's Bay and has recently been included in the Province of Quebec.

In oral testimony before the Select Committee of the Dominion Senate during the session of 1906-7, Dr. Robert Bell, of



MAY IN THE HARBOR OF PORT NELSON

IN THIS MONTH THE ICE THAT HAS GRIPPED THE NELSON RIVER BREAKS UP AND FLOATS OUT TO THE BAY, AND THEREAFTER THE APPROACH TO THE PORT IS AS FREE AS THAT TO OLD QUEBEC

tion in the navigation of Hudson Strait is the question of ice, and this, of late, has been the subject of exhaustive study. Two cruisers were stationed there as late as the month of November, charged with the observation of conditions toward the close of navigation, as had been done through previous seasons.

Hudson Strait is five hundred statute miles in length and averages one hundred miles in width, and if Ungava Bay be regarded as part of the Strait, the width is 250 miles. Cape Wolstenholme marks the westerly extremity of the south bank, the shore of Ungava. Off that point, to the northwest, lies Digges Island, an arm of which, known as Cape Digges, is

the Geological Survey of Canada, registered it as his opinion that, as the Strait is never frozen over at any time, any more than the Atlantic, steamers could pass through even during the winter, although some inconvenience might then be experienced.

"I know of no more desirable piece of navigation in the world, excepting the middle of the ocean," he told the Committee. "Even a common sailor incapable of taking an astronomical observation, could sail through the Strait with perfect safety. This is precisely what Hendrick Hudson's men did, after putting him and his little son and part of his crew into an open boat and casting them adrift.

"There are no serious shoals in the route between Coates Island and Mansfield (Mansel) Island, in Hudson's Bay, nor through the Strait, out to the ocean, and the land is so high that even at night one can see the outlines of the hills against the sky. But an occasional light and a telegraph line connecting them would be useful. There is one island, Charles Island, with one hundred miles or more to the north of it in which to choose one's course."

The examination by the Select Committee of Director A. P. Low, of the Geological Survey, elicited the opinion that the Hudson's Bay route, when it is clear of ice, offers an even better passage for shipping than the St. Lawrence route out of Montreal and Quebec, which is nominally closed to navigation during the winter months.

A number of good harbors are afforded alike by the mainland shores of Hudson Strait and the several islands, although the exceptional currents and tides prevailing render the approach to some of these a test of navigating skill. One, known as Lake Harbor, on Big Island, is annually visited by the Scotch whaler, *Active*. This vessel lands a crew of miners to work in a mica mine which has been long in operation at that point and takes aboard almost the entire Akolingmuit tribe of Eskimos, to convey them to the hunting grounds of Fox Channel and Roes Welcome, in the north of Hudson's Bay, where the men are employed in the chase of whales and walrus.

A few miles inside of Cape Chidley, and sheltered from the severity of the Atlantic gales and sea by the protection of the tongue of land which separates the ocean from Ungava Bay, is Port Burwell. It is expected that this excellent harbor will be chosen for the establishment of the customs station wherefrom both inward- and outward-bound shipping will be regulated.

Decidedly a factor in the development of the project must be the wonderful natural resources of the area through which the railway will pass and of the coast territory which the connecting steamships will bring into touch with the busy marts of Europe. An impelling force must these prove to be in the ultimate peopling and settlement of the whole

country about Hudson's Bay and Hudson Strait.

Although not a single road nor farm crossing has figured in the survey of the entire line of the Hudson Bay Railway, from The Pas to Port Nelson, many varieties of grain and vegetables have for years been successfully grown at the inland Hudson's Bay Company posts in the immediate latitude of the country traversed by the route. The records of the Canadian Meteorological Office indicate that the climate is fully as favorable for farming operations as that of the immense agricultural region about Prince Albert.

Work upon the railway has developed the probability that the timber which may be rendered available by the opening of the line is of much greater commercial value than was originally supposed. Surveying corps following the courses of the lakes and streams with which the country abounds have found these to be bordered by wooded areas varying in size from a few acres to some equalling forty or fifty square miles, and, in the aggregate, representing several thousand square miles.

Although the lands adaptable for agrarian and lumber operations may require improvement in the form of clearing and draining, the fact that they are situated within what will be a few hours' run of an important ocean port undoubtedly will give to them a value not hitherto contemplated, and will result in rapid settlement by an immigrant population.

Hudson's Bay and the watershed of the land to the southward and westward thereof are known to be the haunt of an abundance of fish of excellent quality, and this will become an asset to the Western Canadian markets by the opening of the railway. Fresh sea fish, by the new route, can be laid down within twenty-four hours at all the main centers of Manitoba, Saskatchewan and Alberta. This is expected to form the nucleus of an express traffic in perishable merchandise which recent investigation by the Railway Commissioners of Canada points to as a likely source of great profit to the railway.

The definite knowledge of minerals within the area of the railway is limited to the existence of limestone. This occurs near the southern terminus of the line, in a quantity favorable for quarrying and



SCENES ON THE ROUTE OF THE RAILWAY

- 1 Already a steel bridge on concrete piers has been built to span the Saskatchewan River.
- 2 Manitou Rapids, where the railway will cross the 350-foot channel of the Nelson River.
- 3 Drainage of the Muskeg is necessary in the building operations and is opening up for settlement a virgin country.
- 4 "On the job" near Limestone Lake.
- 5 York Factory, known to the British Admiralty as "York Roads," an old Hudson Bay Co. post near Port Nelson.



TERMINAL TOWN SITE FOR PORT NELSON

ON THE CLAYEY, BLUFF-PROTECTED NORTH BANK OF THE NELSON RIVER, NEAR ITS MOUTH, PORT NELSON WILL RISE, AND HERE TRANS-ATLANTIC STEAMSHIPS WILL CLEAR FOR EUROPE WITH GRAIN CARGOES RECEIVED FROM THE NEW HUDSON BAY RAILWAY

sufficient to provide the future supply for the contiguous provinces of the Dominion.

A glance at the geological formation of the cliffs on both sides of Hudson Strait and of the rocky highlands whereof they form the ledge suffices to promise that, as that waterway comes to be frequented as a route of navigation, mining and quarrying industries will result in extending the zone of operation of tramp steamers in the North Atlantic trade to the Strait proper. The entire coast line of Ungava Bay, from the mouth of the George River around to Hudson Strait and thence westward to Cape Wolstenholme, is described by reports to the Geological Survey of Canada as formed of crystalline rocks of great age, with the occurrence, throughout the length of this shore, of mica-granite, and, to a lesser extent, mica-hornblende granite, associated at many points with gneiss of variable character. This usually is of lighter color, finer texture and greater quartz content than the eruptive granite, and the lighter gneisses are invariably garnet-bearing. A like condition is found on the north shore of the Strait, except that the hornblende and mica-gneiss of Southern Baffin Island are distinguished by association with limestone

in great abundance and regularity of outline.

Bedded iron ore, similar to the iron-bearing rocks of Lake Superior and credited as being of the same age as those famous deposits, have been the subject of investigation and analysis by corporate interests of the Dominion for several years past all along the east shore of Hudson's Bay, and marble of an exceedingly high grade is quarried on Marble Island, off the western shore of the Bay, and on the mainland, near Fort Churchill.

It is in the well-nigh inexhaustible motive power provided by the streams and waterways that the country to be crossed by the railway has its fundamental asset for future industrial exploitation. An approximate estimate of the discharge of the Nelson River alone gives indication of 156,869 cubic feet per second. From this fact it may be judged that this great force might effectively be employed in the operation of the railway by electricity. An available horsepower of 300,000 is represented alone by the White Mud Falls, a monster torrent in the course of the Nelson River and directly on the line of the railway. And the Nelson is but one of many waterways that may become feeders

of the railway traffic. Some of these, like the Nelson, are navigable. The Saskatchewan River, which empties into Lake Winnipeg—to the east of The Pas—out of which the Nelson flows, accommodates moderate draft river steamers for a distance of half a thousand miles westward, across Saskatchewan and Alberta, to Edmonton, the capital of the latter province. In its turn, Lake Winnipeg is accessible, by the Red River of the North, not only from the City of Winnipeg, the metropolis of Western Canada, but from as far south of the international boundary line as Grand Forks, North Dakota.

At present there is no human habitation upon the site proposed for Port Nelson. A good-sized settlement, however, is to be found at York Factory, known to the British Admiralty as York Roads, a trading-post maintained by the Hudson's Bay Company almost since its charter by Charles II, just around the peninsula of Beacon Point, which separates the Nelson from the Hayes River, at their entrance to the Bay. The proposed terminal for the railway is immediately north of the 57th parallel of latitude.

Chief Engineer Armstrong describes the navigating conditions at Port Nelson as resembling somewhat those experienced at Quebec, on the St. Lawrence River. The anchorage being nine or ten miles from the mouth of the channel, no serious sea is ever experienced which might cause trouble to any craft larger than canoes or rowboats, and the river-bottom is of sufficient stiffness to provide secure holding-ground for anchors. As to ice, the Nelson River, from its mouth to the terminal site, may be depended upon to be free from May until December.

The Chief Engineer, in a report to the Deputy Minister of Railways and Canals, points to the markedly increased difficulty a hostile fleet would have in an attempt to blockade the Atlantic coast of Canada

when the Hudson's Bay route is opened. The fact that ships can enter and leave Port Nelson all the year round, he opines, is one worth remembering when the possibilities of war are considered. He states:

"The defence of Port Nelson from hostile fleets will be comparatively easy. The long, relatively narrow channel approach is easily to be rendered impregnable by means of sea mines, and rendered otherwise dangerous by the removal or changing of buoys and other channel marks. Battleships which carry extreme long-range guns are of such a draft as to render it somewhat hazardous to manœuvre in less than forty-five feet of water, thus preventing their approach closer than fifteen or eighteen miles, a distance considerably greater than the effective range of even the heaviest guns. The lighter ships which might more closely approach carry correspondingly lighter guns. The establishment of strong batteries and fortifications at Sam's Creek would seem to be all that is necessary to render Port Nelson quite unassailable."

The likelihood of Port Nelson becoming an objective strategic point in the calculations of land or naval forces invading the Dominion occurs as not altogether a supposition when the picturesquely dramatic events of the long period of warfare between the English and the French, that was terminated by the Treaty of Utrecht, in 1713, are reviewed. The old Fort Nelson, or Fort Bourbon, as it was alternately called by its British and Gallic besiegers, was situated on the shore of the Nelson River opposite to that which is to provide the site for the Hudson Bay Railway terminals, and nearer to the mouth of the river. That point became the scene of repeated conflicts, and the stubbornness of the resistance offered on each occasion of attack and the decisiveness which marked its fall, proves how important a stronghold it was regarded.



COUNSELLORS FROM THE RANKS

By E. C. SNYDER

"IN ITS personnel the Cabinet is representative of the elements that have contributed to the making of a virile people, the great majority of the men having attained fame and position in the hard school of experience. And half of the ten who hold portfolios from President Wilson are from where negro 'mammies' crooned the first lullabies that fell upon their baby ears, and where the 'tar baby' and 'b'rer rabbit' early became the favorite stories of the fireside."

A FIRM, square, unyielding mouth; a high, dome-like forehead; a strong, self-reliant chin; rather predominant cheek-bones; the faintest suggestion of whiskers, and eyes of an indeterminate color, veiled in glasses, form the composite picture presented by Woodrow Wilson's Cabinet, in whose secret making the President seemingly found much genuine enjoyment between November 4 and Inauguration Day, while newspaper folk and politicians kept up a continual guessing as to its composition.

In its personnel the Cabinet is representative of the elements that have contributed to the making of a virile people, the great majority of the men having attained fame and position in the hard school of experience. And half of the ten men who hold portfolios from President Wilson are from where negro "mammies" crooned the first lullabies that fell upon their baby ears, and where the "tar baby" and "b'rer rabbit" early became the favorite stories for the fireside.

With the South in the saddle, as it most certainly is, one who desires to get along in Washington during the next four years will do well to say "you all" and "we all," with the words of a sentence so run together that it sounds like the purling of a rivulet on its way to join some sleepy palmetto- or cypress-fringed river, while high in the branches sways and sings a scarlet tanager.

And this does not indicate, by any means, that the Administration is going to be given to the easy-going philosophy that characterized the southern statesmen of a former day. On the contrary there is everywhere discernible, in cabinet meeting, in conference of bureau chiefs and in the conduct of the departments them-

selves, a new standard for public service with "high thinking and plain living," the President's creed, overtopping all else.

While the Cabinet has yet to find itself, because of its newness and the lack of intimate personal knowledge of the accomplishments of one another, the average of experience in public service is much higher than that of the Taft Cabinet. Mr. Taft believed in having about him a galaxy of legal lights whose political training had been largely negative, whereas Mr. Wilson, while still adhering to the policy of a cabinet largely composed of lawyers, has shown consummate skill in the choice of an editor, an educator, a manufacturer, a miner, an engineer, to give it balance and due proportion, and its political influence must, therefore, be correspondingly greater than that of Mr. Taft's.

William Jennings Bryan, the premier of the Cabinet, has had the experience, unique in American politics, of being thrice defeated for the Presidency, while he has won large personal and financial success. It almost seems that defeat but added to his popularity. Certain it is that no statesman of the present generation has retained so dominant a grip upon the destinies of the Democratic party for nearly twenty years as has the "American Gladstone." From the time he leaped into fame on the crest of a wave of eloquence that swept everything before it in the memorable Chicago convention of 1896, until he held his forces intact and molded the policies of the party to his will in the Baltimore convention of 1912, Mr. Bryan has been the chart and compass of an enormous following, his partisanship being ennobled by a broad humanitarianism that brings him very close to all the people.

For upward of a quarter of a century I have known Colonel Bryan in many capacities—legislator, newspaperman, publisher, orator, soldier, statesman and globe-trotter. During that time I have sat elbow-to-elbow with him in national conventions as a representative of the press; have seen him at the head of a Nebraska regiment during the Spanish-American War, asking only for active service; have sat under the spell of his eloquence and have been electrified by that remarkable oration, the peroration of which created a very frenzy of enthusiasm in that great convention, and brought the delegates to their feet cheering the sentiment: "You shall not press down upon the brow of labor this crown of thorns; you shall not crucify mankind upon a cross of gold."

Colonel Bryan is a remarkable personage in many ways. He has a genuine sense of humor and is one of the very best story tellers in the country, but only of stories fit for the drawing-room. He "never took a drink or smoked a cigar" in his life, but is fond of wholesome, substantial food, his



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WILLIAM JENNINGS BRYAN
SECRETARY OF STATE



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MRS. WM. J. BRYAN

repast on retiring generally being a quart of milk and plenty of bread to break into it.

With all his humanness, William Jennings Bryan entrusts his innermost thoughts to but very few persons, although he numbers his acquaintanceships by hundreds. His one particular friend, counselor and adviser is his wife, Mary Baird Bryan, who, in the strong light that has been turned upon her since her marriage to Mr. Bryan at Perry, Ill., on October 1, 1884, has been found to be a most brainy, charming and interesting woman, marching abreast of her husband in the progressive strides that have made him a world figure. Mrs. Bryan is widely traveled and well-read and versed in the languages, especially German, a feature which will particularly lend itself to the duties devolving upon her as the chate-laine of the Secretary of State's household.

Mr. and Mrs. Bryan have three children: Mrs. Reginald Owen, wife of Lieutenant Owen of the Royal Engineers, British Army; Mrs. Richard Lewis Hargreaves, whose husband is engaged in

business in Lincoln, Neb.; and Mr. William Jennings Bryan, Jr., who is now in Arizona on account of his wife's health.

William G. McAdoo, the new Secretary of the Treasury, although he has lived in New York for a number of years, is typical of the South, with a persuasive musical voice and a delightful southern accent, which may have been largely instrumental in securing for him a hearing at the hands of the big financial interests when the Hudson tunnels were yet in embryo and the name of McAdoo unknown in the railroad or engineering world.

Mr. McAdoo was born near Marietta, Ga., in October, 1863, so that he is not quite fifty years old. He attended the University of Tennessee until his senior year, when he left college to study law, while he supported himself as deputy clerk of one of the divisions of the U. S. Circuit Court.

Twenty years ago he left the South to try his fortunes with others of his countrymen in the Metropolis of the Nation, and the part he played in vitalizing a moribund proposition that had bankrupted two companies is one of the big achievements in a city of big things. Mr. McAdoo's part in the building of the Hudson tunnels consisted chiefly in reviving the idea and hiring the engineers for a project that men less bold than he considered visionary and impractical. He set out to spend \$4,000,000 to complete a partly dug tube, and ended by spending nearly \$70,000,000.

When his tubes were well under way, Mr. McAdoo called upon President Cassatt of the Pennsylvania Railroad to propose the arrangement now in vogue, whereby that system and others carry their passengers into the heart of Manhattan.

"What can I do for you?" asked the great railroad president of the boyish-looking six-footer with the deep-set eyes, the sensitive mouth and the musical southern voice.

"I just want to take your ferries away from you," replied the smiling, confident apostle of the New South.

Mr. Cassatt called a meeting of his board the next morning and said to them: "A young Southerner who studied law, but has a penchant for big engineering problems, wants to take our ferries away from us. You know they are the ones that make our ferry service profitable, but there will be bigger profit, in my judgment, if we accept his plan. I believe in him and we had better go along."

Like all Southerners, Mr. McAdoo is fond of horseback riding. He plays golf occasionally, but his favorite recreation is driving a high-powered automobile, which he does with a zest that is sometimes akin to recklessness, maybe a bit reflective of his entire make-up. The throttle is wide open with William G. McAdoo.

The new Secretary of the Treasury is a widower and has six children, the eldest, a daughter, being married. His home in Washington will be presided over by his daughter, Miss Nona McAdoo, who made her debut shortly before the death of her mother last year.

Just a normal, healthy boy was Lindley M. Garrison, of

New Jersey, Secretary of War, when he played in the parks and streets of Camden, where he was born forty-nine years ago, the son of an Episcopal clergyman, then rector of St. Paul's, and the boy, now grown into vigorous, healthy manhood, has made a most enviable reputation for a perfect frankness as refreshing as it is unusual.



Photo Harris & Ewing

WM. G. McADOO
SECRETARY OF THE TREASURY

After his public school days in Camden, Secretary Garrison attended the Episcopal Academy in Philadelphia for a short period, later entering Phillips-Exeter Academy in preparation for Harvard, where he specialized for a year. But the classical course had little or no charm for Judge Garrison, the desire to become a lawyer taking possession of him about the time he got through wanting to be a policeman or a street-car conductor, with the result that he graduated from the law department of the University of Pennsylvania in the class of 1886.

For two years the Secretary of War practiced law in Philadelphia. Then he removed to Camden where, for ten years, he engaged in the practice of his profession. In 1899 he took up his residence in Jersey City, being appointed Vice-Chancellor of the Court of Chancery of New Jersey, on June 15, 1904. This position he held when President Wilson asked him to enter the Cabinet as War Secretary.

During the years of his active practice as a trial lawyer, Lindley M. Garrison looked upon a place on the bench like unto the Kingdom of Heaven, to be achieved only by the elect, and yet when the honor of sitting as a member of one of the highest law courts in the nation came to him, it neither "puffed him up nor filled him with false pride."

The impression was general in Washington that Mr. Garrison, having been a judge, would take a sternly judicial view of public affairs as they related to his department, and there were many misgivings among the rank and file of the war office on his advent. But Secretary Garrison has done nothing of the kind; on the contrary he has shown such an earnest desire to know the "whys and wherefores" of the department, with all its intricacies of legislation, that he gives abundant promise of being one of the most valuable, as he is one of the most genial, members of the official family.

Thirteen years ago Mr. Garrison married Miss Hildeburn, daughter of Capt. Samuel Hildeburn, U. S. A., and the fact that she is the daughter of an army officer will give her a closer affiliation with that branch of the service over which her husband presides than would otherwise be the case. Secretary and Mrs. Garrison have no children.

It is not often that a man reaches the high post of Attorney-General of the United States after he has held no higher office than Assistant Attorney-General, and before that held no public office at all. But that is the case with Attorney-General James Clark McReynolds, born in Kentucky, July 23, 1865, credited to Tennessee, but in reality, on March 4, when he was selected for a place in the Wilson Cabinet, a resident of New York.

The son of Dr. John O. McReynolds, a leading physician and banker of Elkton, Ky., and Ellen Reeves McReynolds, most of his boyhood was spent at his home, going to the village school, and remaining under the home roof until he was old enough to go to college. He attended Vanberbilt University, Nashville, Tenn., and in due course took the degree of B. S., in 1882. In 1884 he had taken a law course at the University of Virginia, and went to Nashville, where he practiced law for fifteen years, with little to vary the life, except in 1896, when he was persuaded to become the candidate for Congress of the



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LINDLEY M. GARRISON
SECRETARY OF WAR



MISS NONA McADOO
Photo Aime Dupont

MRS. LINDLEY M. GARRISON
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MRS. J. DANIELS
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when he was successfully importuned by the Government to undertake, as special attorney, proceedings for the enforcement of the anti-trust laws, especially against the Tobacco Trust and the Anthracite Coal Trust.

His nomination to be a member of the Wilson Cabinet, in view of the fact that the chief office, that of Secretary of State, was given to William J. Bryan, whom he had always opposed, was the greatest surprise disclosed in the Cabinet slate. It indicated to most people that President Wilson was not controlled by prejudices that had long divided the Democratic party.

Mr. McReynolds is the only bachelor member of the Cabinet; but his tall, erect, athletic figure, his easy bearing and grace of manner are at least suggestive of a divergence from his habits of celibacy. His friends say that he has been too busy a man in his profession to think seriously of much else.

Standing out in the middle of his room in the Post Office Building, Albert Sidney Burleson, the new Postmaster-General, amazes the clerks about the department with the seeming ease with which he dispatches the business of the day, not only seeing hundreds of people, but finding time to attend upon the multitude of little things required

of him. Always a hard worker, Mr. Burleson is now working harder than ever, with the result that he has accomplished more in the way of appointments than any of his associates, a fact which has caused much comment.

A true native

Palmer and Buckner Democrats of the sixth Tennessee district.

While a Democrat, he so much opposed the attitude of William J. Bryan, Democratic candidate for President, that he quit the old party and went with the opposition. He has never sought to minimize his course, and does not object to being set down as a "Gold Democrat" in the reference books which contain his brief biography.

For a few months, while he was a young lawyer at Nashville, Mr. McReynolds was private secretary to Howell E. Jackson, United States Senator from Tennessee, until the latter was appointed to the United States Circuit bench by President Cleveland.

Defeated for Congress by John Wesley Gaines a number of years ago, Mr. McReynolds went to work in the law with an energy and natural aptitude for mastering difficult problems which brought him continuous rewards. Independent and Republican friends in Tennessee, who knew of his moral courage and professional capacity, so continually sounded his praises that President Roosevelt, in 1903, appointed him Attorney-General of the United States, an office which he held until 1907, when he resigned and went to New York. He had hardly established himself there

Texan, born in 1863, Postmaster-General Burleson comes of Scottish stock, which is strongly reflected in his rugged form and character. Mr. Burleson entered Congress in 1898 on the strength of his record as a relentless prosecutor of law-breakers in the "wild and woolly" days of an untamed section of the State. He served in Congress for fourteen years, and although known as a firm and virile minority party man, he developed enough to write into the statute books much constructive legislation affecting agriculture, with especial reference to cotton, the most important product of his section and the basis of its prosperity.

Mr. Burleson, early in his career, learned the value of the newspaper and the magazine, with the result that he is interested in big things—big politics, the amelioration of China and the working out of Dr. Sun Yat Sen's theories for the new republic, the Balkan situation and the changes being wrought in the map of Europe, to say nothing of the Mexican imbroglio and the likelihood of its playing a big part in our own history, as it played in the history of his family.

With Mrs. Burleson, who is a woman of strong intellect and of pronounced literary ability, Mr. Burleson has studied and mastered many difficult subjects, including a number of foreign languages.

Like many men of vigorous action in business and professional life, the "P. M. G.," as he is called by everybody about the big building, is fond of his rod and reel and his guns. In the old

days, before he assumed the exacting duties of Congressman from a progressive district, he used to enjoy a deer hunt every year and, whenever he could find respite from the duties of his office in Austin, would slip away to some cool, secluded nook along the Colorado, there to cast for bass or channel cat and dream the dreams that come to all lovers of the great outdoors.

With a brilliant wife and three charming daughters to make his home life delightful, Mr. Burleson's official life should be both fruitful and effective.

Josephus Daniels is the fifth Secretary of the Navy from North Carolina in the history of Cabinets, and it is singular that the State never had any other kind of Cabinet officer. It is also remarkable that the new Secretary is the only one of the five who went into the Cabinet without having ever before held important office. The only thing like a prominent office Mr. Daniels ever held up to his appointment as Secretary of the Navy was as member from North Carolina of the National Democratic Committee.

He was born in the village of Washington, N. C., May 18, 1862, the son of Josephus Daniels and Marie Cleve Seabrooke Daniels. His father, of Welsh descent, was a ship-builder and spent some time in that vocation in Providence,



MRS. F. K. LANE
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MRS. D. F. HOUSTON
Photo Strauss, St. Louis

MRS. ALBERT S. BURLESON
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MISS AGNES WILSON
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Rhode Island. He died during the war of the States, when the future Secretary of the Navy was not three years old. The boy attended the village schools for several years, and then went to Wilson, N. C., Collegiate Institute. His first confessed

ambition was to be an editor, and he became an editor while he was in his teens, conducting a school publication called the "Cornucopia." At eighteen years of age he was editor of the "Wilson Advance," a grown-people's newspaper. Thereafter he became editor of the "Raleigh State Chronicle," succeeding Walter H. Page, formerly editor of "World's Work" and now our Ambassador to the Court of St. James. This paper he consolidated with the "Raleigh News and Observer," of which he has long been the editor, and is now the owner.

Mr. Daniels has kept constantly employed in the newspaper field, and has been one of the foremost of southern publishers and jour-

nalists. He has not varied from this occupation, except for a few years when he was chief clerk of the Interior Department during the last Cleveland administration.

The last Democratic Secretary of the Navy was also a southern man, Hilary Herbert, of Alabama. Mr. Daniels, like the average of the Wilson Cabinet, is physically vigorous and in the very prime of life. With the aid of the energetic and sagacious

young Franklin D. Roosevelt, of New York, as Assistant Secretary of the Navy, the same office held by his remarkable cousin, Theodore Roosevelt, it is expected the department will supply a most interesting feature of the Wilson administration. Mr. Daniels, in politics, has been described as a progressive. He was long an ardent follower of the leadership of William J. Bryan. He was one of the first advocates of the nomination of Woodrow Wilson for President, and following the convention at Baltimore was manager of the literary bureau for the campaign.

Mr. Daniels has a most interesting family. His wife was Addie W. Bagley, daughter of Major W. H. Bagley, and a sister of Ensign Worth Bagley, the first American officer and the only officer of the Navy to lose his life in battle in the war with Spain. Mr. and Mrs. Daniels have taken a suburban home, near the location of the old Grover Cleveland mansion and adjoining the estate of Senator Newlands, of Nevada. In a playground covering ten acres, his four lusty boys, not yet out of their teens, will have plenty of room to run and wax strong.

What is the keynote to the character of Franklin K. Lane, the highly equipped Secretary of the Interior? What is the keynote? The answer came suddenly when I heard him propound to the late E. H. Harriman, president of the Harriman lines, a series of questions as to railroad policies. Then I knew that the distinguishing features of Mr. Lane's character are: A true appreciation of the just proportion of things, an intense belief in the laws of equity, an earnest advocate of the equality of man, and an uncompromising hater of shams and hypocrisies.

As laborer, as employer, as lawyer, as corporation counsel, as city attorney, as newspaper correspondent and as member of the Interstate Commerce Commission. Franklin K. Lane has shown these things. As a keen man he is mentally trying to do to-day's work within that period rather than year after next, but to do the work of to-day as a thing related to the past and the future. He showed this trait most largely when, as San Francisco's first corporation counsel under its new charter, he had many pioneer cases requiring not only infinite tact but preeminent constructive ability.



Photo Harris & Ewing

ALBERT SIDNEY BURLERSON
POSTMASTER GENERAL

So signally successful was he that he came within 2500 votes of being elected governor of California in 1902, after 7,000 Democratic votes had been rejected on account of defective marking. At that same election the candidate for chief justice on the Republican ticket received 55,000 majority, a striking example of Mr. Lane's popularity with the masses.

Franklin K. Lane is a practical conservationist, having due appreciation of the Government as a proprietor and of our civilization as one of private initiative rather than of government operation, and along these lines he will work. The fact that he cannot be President of these United States, because he was born under the "Union Jack" in Prince Edward Island, nearly fifty years ago, does not concern the new Secretary of the Interior the least bit.

Mr. Lane has plunged into the work of one of the most troublesome departments of the Government with a single purpose, to see that even-handed justice is meted out to the millions who are dependent upon the department's policy with regard to public lands, patents, Indians and pensions.

Has Mr. Lane a hobby? Yes, I should say it is his wife and his children, Mrs. Lane being a handsome and accomplished woman who has a taste for art and music. Mr. and Mrs. Lane have two children, Franklin Lane, Jr., who is sixteen, and Nancy, who is ten.

Big problems confront the new Secretary of Agriculture, David Franklin Houston, whose appointment was the sensation of Inauguration week. President Wilson had evidently made a close study of the Department of Agriculture previous to taking the oath of office, for in his masterly inaugural address he spoke of "carrying science direct to the farm." Casting about for a man who was not only thoroughly equipped from a scholastic and scientific point to fill the duties of the office, but who had large executive ability as well, he finally hit upon Mr. Houston, chancellor of Washington University of St. Louis, whose work as a schoolman had been known to the President for many years.

While the appointment is credited to Missouri, Professor Houston may be said to represent three States: North Carolina, where he was born, February 17, 1866;

Texas, where he served long and brilliantly; and Missouri, which, through this appointment, has the honor of having six Cabinet officials from that State within a short period of years.

Progressiveness and aggressiveness have been the distinguishing factors in the life of the new Secretary, whose robust constitution, capacity for hard work and joy in his ability to do good for the masses of mankind give hope that he will be able to solve the problems which not only deal with the productivity of the soil but also with improving the methods of agriculture.

Throughout his busy life Chancellor Houston has shown a preference for history, biography, government and economics, having written a most exhaustive study on "Nullification in South Carolina," which has received high praise from literary critics and the statesmen of to-day. In addition to this excellent work he has written innumerable treatises on agriculture and political subjects.

And in passing, those who know the new Secretary extremely well say that he has a marvelous knowledge of plant life, knowing their Latin names and taking a very great deal of humor in reciting them to those who know him well, as restful places along the lines of conversation.

Secretary Houston married Miss Helen Beall in Austin, Texas, in 1895. They



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J. C. McREYNOLDS
ATTORNEY-GENERAL



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JOSEPHUS DANIELS
SECRETARY OF THE NAVY

have a family of young children: Franklin, a boy of thirteen; Helen, who is two years old; and Lawrence, an infant of three months. Mrs. Houston is a great-granddaughter of W. P. DuVal, who was territorial Governor of Florida in Jackson's time. Owing to Mr. Houston's connection with the Washington University, Mrs. Houston has been brought into close contact with college activities and has become much interested in sociological studies.

The tariff cemented President Wilson's confidence in the new Secretary of Commerce, William C. Redfield, of Brooklyn, New York. His position, as a manufac-

turer, that American labor did not need the protection afforded by the tariff, brought Mr. Redfield conspicuously before the country as a tariff reformer who had made an intimate study of this most intricate of economic questions, and which is to play so important a part in the history of the administration, which, in its platform, made at Baltimore, has pledged itself to tariff reform.

His speeches on the wool schedule, during the debates on the Underwood bills in the Sixty-Second Congress, attracted so much attention that, when Woodrow Wilson received the nomination for the Presidency, Mr. Redfield was among the first to receive an invitation to visit the standard bearer of the party, and tariff was largely the subject of discussion. Mr. Redfield talked and Mr. Wilson listened, with the result that shortly afterward the President publicly announced that Mr. Redfield appeared to him as an unusually clear thinker on those subjects which are intimately associated with the farmer, the tradesman, the miner, the business man; in fact, everyone who has to purchase or sell the commodities by which he lives.

In 1885, Mr. Redfield married Miss Elise Merceiu Fuller, daughter of a New York banker, Humphrey R. Fuller. Mrs. Redfield was educated in New York and has spent most of her life in that city. Mr. and Mrs. Redfield have two children: a daughter, who is married and resides in Canada, and a son, Humphrey Fuller Redfield, who is a student at Amherst College.

Mr. Redfield is tall, wears side-whiskers and a mustache, and is a person of commanding appearance and striking personality. He was born in Albany, N. Y., in 1858. He has been engaged in the mercantile and manufacturing business for many years and has been successful—so successful that, at the time of his appointment to the Cabinet, he resigned many positions in strong financial institutions, including that of a director of the Equitable Life Assurance Society.

The Secretary of Labor, William Bauchop Wilson, of Pennsylvania, like his predecessor of the same patronymic in the Taft Cabinet, is a Scotchman, born in Blantyre in 1862, coming to the United States with his parents when he was eight years of age, and going to work when a boy of nine as a picker in the

coal mines near his new home in the Keystone State.

From picker in the mines, the first Secretary of Labor held various positions in that underground world of which the great mass of our people can know nothing, except as the chorused "De Profundis," the cry for better treatment, comes out of the depths and pictures are shown indicating the hardships of a life below the surface of the ground. As soon as he was eligible, Mr. Wilson joined the ranks of the Mine Workers' Union and he has taken an active interest in trades unionism ever since. He has faced penury and want, he has struggled as few men have struggled and has looked death in the face on many occasions. He has been a fireman on a railroad, worked in the sawmill, "stuck type" on a country newspaper and "fed" a Campbell press.

"The Department of Labor," said Mr. Wilson, as he looked at me with his clear blue eyes across his desk in the newly-created office and which will shortly be housed independent of the Department of Commerce, "I regard primarily for the promotion of industrial peace, with honor and justice to all parties concerned, and not for the adjustment of differences when they reach the spectacular stage.

"The Department of Labor was organized to help the toiling masses and to give them some hope for better treatment than possibly they are now receiving, some court where honest grievances might be heard and where equitable adjustments between employer and employee would be possible, with justice to all parties concerned."

Believing that the immigration question is distinctly a labor question, since the immigration laws are made, not with reference to the idle or rich persons who come to the United States, but with respect to the workers, the recommendations

of Secretary Wilson will be watched with absorbing interest by the masses everywhere. Mrs. Wilson is also Scotch, having known her husband as a child when they played together on the banks of the Clyde before their families emigrated to the new country.



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D. F. HOUSTON
SECRETARY OF AGRICULTURE



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FRANKLIN K. LANE
SECRETARY OF THE INTERIOR

Mrs. Wilson was Miss Agnes Hart Williamson. The eldest of their eleven children, Miss Agnes Hart Wilson, has been her father's secretary since she was fifteen-years old, and has a comprehensive

knowledge of labor questions. During the years Mr. Wilson was in Congress, and he served continuously since the beginning of the Sixtieth Congress, his daughter Agnes has been "his right hand."

Taken together these ten men are the Counsellors chosen by Woodrow Wilson to aid him in the conduct of the Presidency of the United States, an office burdened with duties and responsibilities at least as numerous and as weighty as any other in the world. But each of the ten, besides acting as Counsellor to the President, is himself the chief executive of a great department of a government which not only influences for good or ill the lives of

the more than one hundred million people who owe it allegiance, but also affects to a greater or less degree all the nations of the earth. The problems they are called upon to face are therefore many and complex.

Time and precedent have established the official standing of every member of the Cabinet circle as they here pass in review. There can be no friction between them on the score of seniority in party councils or pre-eminent achievement. Their orbits, so far as official standing is concerned, are fixed, but the elements that make for leadership along other lines and which are

largely individual, giving eminence to one and comparative obscurity to another, are the pivots on which swings the human story of every administration. And as it has been with every administration, so will it be with this one, whose advent has been watched with absorbing interest, not only by the millions of our own people, but by the nations of the world. And the prayers of the people are for a wise, patriotic, statesmanlike administration that will redound to the glory and honor of President Woodrow Wilson.



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W. B. WILSON
SECRETARY OF LABOR



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W. C. REDFIELD
SECRETARY OF COMMERCE

THE SEAPORT OF LOS ANGELES

By CHRISTOPHER M. GORDON

THIS 'imperial' territory contains almost one-third of the wealth-producing resources of the United States and must, in the very nature of things, find its Pacific Ocean outlet over the attractive southern trans-mountain trade routes from the east, that center in the Port of Los Angeles * * * which, in large part, will be municipally owned and operated." A member of the Los Angeles Harbor Commission, Mr. Gordon would rank the lovely California city among the great ports of the Pacific Coast.

IT is a marvelous transition that a century of history has witnessed on the flower-carpeted coast of Southern California. No fairer scene might be conceived in the imagination of poet or artist than that which was a constant characteristic of the vicinity of the early Spanish settlement of "La Ciudad de Nuestra Senora la Reina de Los Angeles"—the City of Our Lady the Queen of the Angels—one hundred years ago. On every hand there were the same floral wealth and beauty of foliage, the same towering, snow-capped mountains maintaining their vigil over the destinies of the city, the same azure skies that provide the Los Angeles of to-day her glorious environment. But the quiet, ascetic influence of the Spanish missions of old is forever dispelled, the call of the Angelus from silver-tongued bells and the solemn chant of the "padres" are but hallowed memories of a bygone age. And the pulsating energy and high-pressure intensity of modern industrial life testify most eloquently to the rise of a mighty city on the site of the ancient mission.

For many years Los Angeles was content to develop essentially as an inland center, was content to gather unto herself the products of the groves of orange and lemon and cherry and fig and of the vineyards that make of her environs a very Paradise; was content to occupy the position of a station on the railroad highways from the Atlantic and the Gulf to the Golden Gate. But with the dawn of that great undertaking which must reverse the maritime standards of the whole world,



Los Angeles resolved to take rank among the ports of the Pacific seaboard of North America, although a plain of more than 100 square miles separates the city proper from the ocean. Already a municipal terminal and belt railway is being built to traverse this area, which it is planned to make the future industrial section of the Southern California metropolis.

Los Angeles has become not only a California port, but a national port, and is rapidly advancing to the position of a great international port. It is farther east than Reno, Nevada; it is the nearest Pacific port to Kansas City and all the territory tributary thereto, and this over the easiest possible trans-Rocky Mountain grades. The Panama Canal is 413 miles nearer to Los Angeles than to San Francisco.

No other city of the United States of more than 100,000 population in 1900 equaled the percentage of growth made by Los Angeles, as shown by the last Federal census. The Pacific Coast grew more rapidly, proportionately, than did any other part of the country, but the figures indicate that the apex of Pacific Coast immigration was at Los Angeles. The comparative figures for the principal Pacific port cities are as follows:

	POPULATION 1900	POPULATION 1910	PERCENTAGE OF INCREASE
Los Angeles . . .	102,479	319,198	211.5
San Francisco . .	342,782	416,912	21.6
Seattle	80,670	237,194	194.0
Portland	90,426	207,214	129.2
Tacoma	37,714	83,743	122.0
San Diego	17,700	39,578	123.6



Photo by C. C. Pierce & Co., Los Angeles

A METROPOLITAN THOROUGHFARE
SIXTH STREET IS A VERITABLE CANYON OF OFFICE BUILDINGS

The city is the center of activity for all of the Southwestern United States, with its amazing wealth of agricultural, horticultural, mineral, oil and other resources. It is the natural Pacific port of distribution and receipt for the mountain States of Arizona, New Mexico, Southern Nevada, Utah, parts of Wyoming and Montana and, in fact, for much of the great central basin west of the Mississippi River. This "imperial" territory contains almost one-third of the wealth-producing resources of the United States, and must, in the very nature of things, and for all

time, find its Pacific Ocean outlet over the attractive southern trans-mountain routes from the East, which converge to their logical center in Los Angeles.

Where, in minor details, nature has failed to supply to Los Angeles the requirements of a modern harbor, engineering skill is fully overcoming the deficiencies, with the result that Los Angeles must soon possess a harbor for all manner of shipping as nearly perfect as can be found in any part of the world. This is true alike as to location, size, shape, convenience and possibilities of expansion. The outer harbor consists of the splendid Bay of San Pedro, which looks to the south, and is protected on the east, north and west by the encircling mainland of the continent. On the southwest it is protected by the beautiful island of Santa Catalina, which is but 18 miles distant, and parallels the main coast for a length of 30 miles.

In addition to these natural features, the Federal Government, for fuller protection from the southern seas and in order to provide a perfect harbor of refuge, has built one of the largest stone breakwaters in the United States. This is a

magnificent specimen of marine construction, extending eastward from Point Fermin for a distance of more than two miles and providing a low-tide depth of 50 feet. The space thus immediately guarded from storms contains more than 700 acres, and more than one-half of this has a depth of 30 to 50 feet. The anchorage is of the best, and the means of ingress and egress for shipping are unsurpassed.

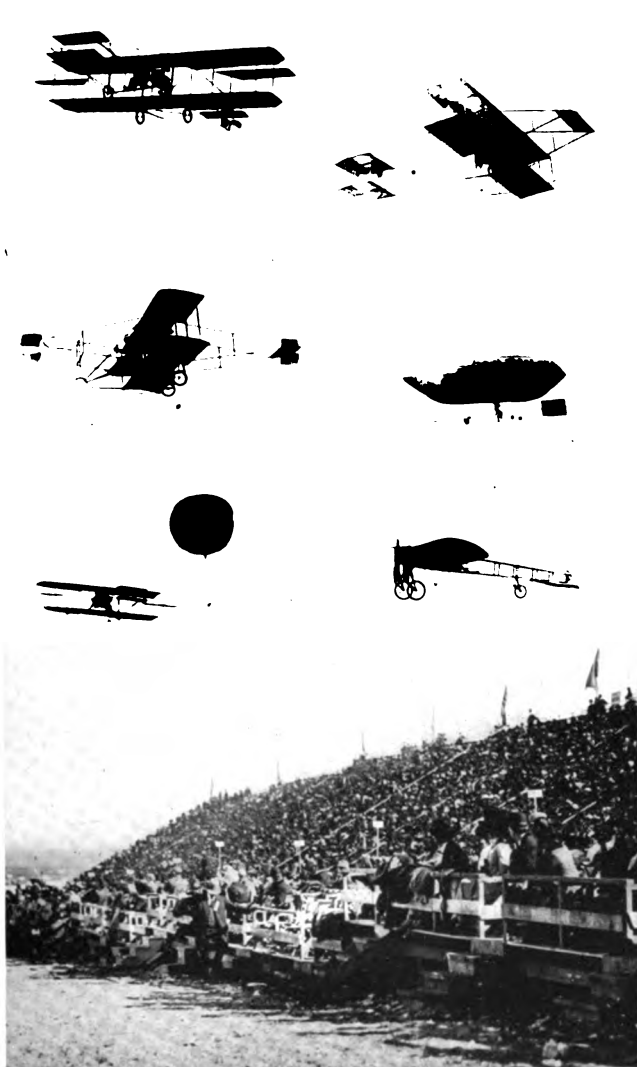
Los Angeles is especially important as a port of fuel supply for the world's shipping. Here the Salt Lake Railway will establish immense coal bunkers, from

which Utah coal will be fed to coal-burning ships at a price that will command the business. Here Alabama coal—taken through the Panama Canal—can be stored and supplied to shipping at about \$4.00 per ton. Here pipe lines from the marvelous oil fields nearby will pour fuel oil into oil-burning ships at a price as low as that of any other port.

Since all steamships are propelled by means of either coal or oil, it follows that all steamships that can conveniently do so will call at the Port of Los Angeles. All of these potential natural and artificial advantages are fully recognized and appreciated by the virile citizenship of Los Angeles.

The Port of Los Angeles will be, in large part, municipally owned and operated. In the outer harbor is Municipal Pier No. 1, 3500 feet long by 650 feet wide, and with a low-tide depth of water of 35 feet on all sides. Its superficial area is 77 acres. The water area provided is 400 feet of width on one side and 550 feet on the other, and the present low-tide depth of 35 feet will be increased to 40 feet, and out to the 40-foot contour line, whenever the shipping requires it.

A reinforced concrete sheet-piling wharf is now being constructed around this magnificent pier, and immense two-story warehouses are soon to be built. Equipped with the latest and most approved appliances for handling and despatching cargo, these will be in readiness for the increase of shipping that must result from the opening of the Panama Canal. To these piers there can come, at any hour of the day or night throughout the year, with few exceptions, the largest ships afloat, and these may enter the harbor, berth under their own steam and deliver



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 "FLY TIME IN LOS ANGELES"
 DOMINGUEY AVIATION FIELD, THE AERIAL CONTESTANTS AND THE "FANS"

freight and passengers within a half-hour from the open sea.

Two fortunate conditions are peculiar to the harbor of Los Angeles. There is no bar at its entrance, and there is little or no silting—hence the ease and safety of entrance and egress, and of the constant maintenance of a uniform depth, with little or no dredging. The Federal Government has expended about \$5,500,000 in this harbor, all told, to date. The City of Los Angeles is now expending \$3,000,000, and proposes to continue its expenditures up to \$10,000,000, at least.

The inner harbor of Los Angeles furnishes the very best of port conditions, and has dockage facilities that can easily and cheaply be permanently increased to meet the growing demands of commerce. The entrance from the outer harbor is completely sheltered by the breakwater, and has a channel width of 500 feet. It is now proposed to increase this width to 750 or 1000 feet. The channel, on both sides, for a distance of two miles, is lined with wharves and slips and railroad trackage,

between two stone jetties built into the sea.

The inner harbor, which is really the delta of the Los Angeles and San Gabriel Rivers, embraces within its area thousands of acres of submerged and contiguous low land, and out of these tide lands there can be created, at little cost, a practically limitless industrial harbor. When the commercial, industrial and manufacturing expansion of the city and port demands 30 miles of wharf frontage, it will be forth-



Photo by Wood, San Pedro, Cal.

S. S. "HAZEL DOLLAR"

DISCHARGING \$250,000 CARGO OF HARDWOOD FROM THE ORIENT

and terminates in a turning basin 1600 feet in diameter, at the margin of the inner harbor proper.

From this turning basin adequate channels lead off to other wharves and dockage, and into two other turning basins—one known as the east and the other as the west basin. Another channel extends eastward from the main turning basin for a distance of about four miles, to the east end of the inner harbor, and to what is known locally as the Long Beach Harbor, which has its own entrance from the ocean

coming, and when it needs 60 miles, this, too, will still be possible, in this incomparably accommodating inner harbor. Its location is of the very highest strategic importance from a commercial point of view.

In 1912 the number of lines of ships calling at the port was eight times greater than in 1902, and three times greater than in 1907. The number of ships calling was three times greater than in 1902, and twice as great as in 1907. The net tonnage was seven times greater than in 1902, and

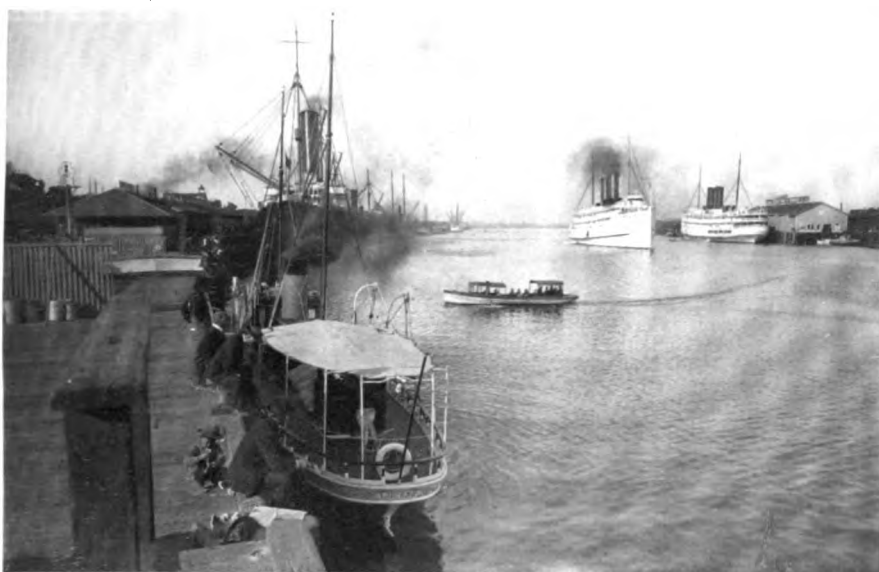


Photo by Wood, San Pedro, Cal.

INNER HARBOR, LOS ANGELES

FORMER NEW YORK-BOSTON TURBINE STEAMSHIPS "YALE" AND "HARVARD," WHICH LATELY CRUISED TO THE PACIFIC "ROUND THE HORN," ENTERING AND LEAVING ON SAN FRANCISCO RUNS

three times greater than in 1907. The passenger business was twenty times greater than in 1902 and seven times greater than in 1907.

The city has commenced the construction of a municipal terminal and belt railway, which will belt the entire harbor,

servicing all wharves and unifying the entire system of dockage in both the outer and inner harbors. It will also belt the present industrial section of the city, and along its trunk-line there will grow up the great future industrial areas of Los Angeles, served by a hundred spurs, on a



Photo by W. C. Dickerson, Los Angeles

TWO-MILE STONE BREAKWATER

PROVIDING SHELTERED HARBOR OF 700 ACRES WITH DEPTH OF 30 TO 50 FEET



Photo by Milton Loryea, Los Angeles

A TYPICAL CITY RESIDENCE

THE OLD MISSION STYLE OF ARCHITECTURE SET IN A WEALTH OF FOLIAGE

level plain, more than 100 square miles in extent, between the city and the sea.

Although the city owns most of the harbor frontage and is developing it as a municipal enterprise, ample encouragement is given to private enterprise. Already several private corporations own and operate wharves within the harbor. These have a frontage of several miles.

Large sums of money are being expended by the city in perfecting approaches to the harbor, not only for rail facilities, but also for motor-truck traffic, which promises to become a strong competitor of the railroads in handling local freight, especially that moving in less-than-carload quantities.

The fact that the city's present population of half a million is four times as great as it was ten years ago, and that in 1920 a population of more than a million is assured, together with the accessions to its maritime trade which are inevitable upon the opening of the Panama Canal,

guarantees for the Port of Los Angeles a volume of business that must place it high in the list of the world's great commercial terminals.

The assembling in New York, in December last, of the port officials of the United States and the organization by them of a new body, known as the National Association of Port Authorities of the United States, was a long step in the right direction. This body will meet annually, and modern harbor construction, regulation and control, in contra-distinction to the imperfect methods hitherto obtaining, will be the object of its activity.

The subject of port development is becoming a factor in economic science, and port officials are becoming professional experts in their line. The interdependence of ports, in the evolution of port facilities, is at last being recognized, and the chief rivalry among ports now is as to which may best serve by most fully obeying the laws of trade.

FOR A 1000-MILE ERIE CANAL

By CYRUS CLINE, M. C.

THE construction of a barge canal from Chicago to Toledo, to carry a part of the immense tonnage of heavy freight from Chicago and intervening points direct to New York, Boston, Baltimore and Philadelphia, without breaking bulk, is, in fact, but an extension of the Erie Canal. * * * * * For three-fourths of the distance the waterways from Chicago to the seaboard are already constructed." So the Representative in Congress from the Twelfth Indiana District urges the speedy completion of the useful water highway.

SHALL the Erie Canal be extended westward to Chicago? Shall the famous old waterway directly link the pulsating industry of the busiest and greatest of lake ports with the electrifying commerce of America's mightiest portal, New York?

The proposed Toledo-Fort Wayne-Chicago barge canal across the northern part of Ohio and Indiana has been a subject of discussion for more than sixty years. As population increases and business develops, the necessity for the competing methods of transportation becomes more and more important, not only to the section named, but to the entire country. Its proposed location, its environment, the purpose it would serve, a great expanding commerce, the multiplied and diversified industries in which millions of people are engaged, and upon whose industry and production many more millions depend for subsistence—all these elements have centered upon the project the lively interest of five of the greatest States of the Union.

The construction of a barge canal from Chicago to Toledo, to carry a part of the immense tonnage of heavy freight from Chicago and intervening points direct to New York, Boston, Baltimore and Philadelphia, without breaking bulk, is, in fact, but an extension of the Erie Canal. Let me remind you, before discussing the merits of this improvement, that Chicago is a thousand miles inland from the Port of New York, the greatest export and distributing center of the continent. A distance of three-fourths of the proposed waterways from Chicago to the seaboard is



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already actually constructed.

Seven hundred and fifty miles of this great competing highway for future trade is about finished and only 240 miles remain to be constructed, when we shall have competition in freight rates and ample transportation facilities, not only for the grain and meat producing district, but, also, for the greatest manufacturing center of the United States. Of that 240 miles, 120 miles can easily be

accomplished by canalizing the Maumee River from Toledo, Ohio, to Fort Wayne, Indiana, and the remaining 120 miles can be cut with little cost through a fairly level country, traversing the rivers and lakes of Northern Indiana to some point on the southern shore of Lake Michigan.

A glance at the map suffices to demonstrate that the proposed barge canal, as an air line route of transportation, would cut off 850 miles from the existing circuitous round trip between Chicago and Toledo, via Lake Michigan, the Straits of Mackinac, Lake Huron, the Detroit River and Lake Erie. Our purpose is to cast the remaining link of the proposed waterway in a size sufficient to float heavy freight from Chicago to New York and the eastern cities, without the expense of time and money incident to re-loading at any point on the line.

The merits of the proposed improvement so impressed the Congress of the United States that it ordered a survey from Toledo, Ohio, by way of the Maumee River, to Fort Wayne, Indiana, and thence to the lower end of Lake Michigan, or by "other feasible route." The friends

of the project base the necessity for it upon two distinct grounds; namely, increased facilities for transportation that shall meet the requirements of constantly increasing production and competition in freight rates. No other reasons need be considered, and in this paper I shall avoid the question of feasibility, specific location west of Fort Wayne or cost of construction.

It has been said that the Upper Mississippi is the "meat basket and bread basket" of the continent. Clustering close around the western terminus of the proposed waterway lie the great States of Indiana, Illinois, Michigan, Ohio and Wisconsin, with more than 18,000,000 of people. Immediately and directly tributary to these lie the States of Minnesota, Iowa, Missouri, the Dakotas, Nebraska and Kansas, with 12,000,000 more, constituting a third of the population of the Republic, which contribute all of their constantly increasing trade to that inland metropolis for distribution. Lying within a radius of 200 miles of Chicago are the richest agricultural regions on this hemisphere. So rich is the territory and so enormous its production that there have been attracted to this great center of wealth all the transconti-

ental railroads of the country. We are able, with our agricultural products, not only to supply our own market, but to feed the Middle Atlantic and New England States, and still sell nearly a thousand million of products in the world's markets.



WHERE THE MAUMEE RIVER WINDS IN ITS COURSE NEAR ANTWERP, O., JUST EASTWARD OF THE INDIANA BORDER

This section produces an immense output, with many thousands of acres embraced within the area that have not yet produced a dollar's worth of food products. We have scarcely "scratched the soil," compared with what our possibilities are.

I have said nothing yet about manufactures. Of the 18,000,000 of people, living in Ohio, Indiana, Illinois, Michigan and Wisconsin, 10,000,000 dwell in our cities and towns and constitute each city and town a manufacturing center. In the narrow zone through which

we propose to construct this highway of trade lie cities of very great commercial and manufacturing activities. Between the termini, Chicago and Toledo, are the cities of Hammond, Indiana Harbor, Gary, East Chicago, Whiting, La Porte, South Bend, Elkhart, Mishawaka, Michigan City, Goshen, Ligonier, Kendallville, Fort Wayne, and Defiance, with numerous smaller cities intervening. No more extensive manufacturing



CONCRETE ELECTRIC RAILWAY BRIDGE SPANNING THE MAUMEE RIVER, BETWEEN WATERVILLE AND "ROCHE DE BOUT," NEAR TOLEDO, O.

district exists than that in which these cities are located. At the foot of that great inland sea, where is focussed the commerce of the Mississippi Valley, are now more than twenty independent, immense iron and steel producing corporations, repre-

and trebled the output of our agricultural and manufacturing industries? The roads now in possession and control of the commerce of the millions of people and of the millions of capital invested, absolutely dictate what the people shall pay for their service. They are a unit in their charges and these charges are greater from intermediate points to the same destination than they are from the initial point.

Men who are in a position to form correct judgment say that we shall double our population in the Upper Mississippi Valley in two decades. If so, without the barge canal every possible avenue for shipment will be congested; prices thereby will be affected and all industry more or less stagnated. This wealth-producing region ought

not to be handicapped, limited or circumscribed in what it is capable of doing. Its diversified industries, planted thickly between the termini of this important new highway of trade, are constantly taking on new capital. It has been said that there ought to be fair and honorable competition in freight rates between all the transportation systems engaged in the business. If that is so, no course could be pursued by the general government that would so



DAM AT GRAND RAPIDS, ON THE MAUMEE RIVER—AN EXAMPLE OF THE PRESENT DEVELOPMENT OF THIS STREAM FOR CANAL PURPOSES

senting scores of millions of invested capital. There is not a month but what additional capital by the million is invested in manufacturing. From 1905 to 1909, the manufacturing capital in this section increased 46 per cent.

It is admitted by all persons engaged in the transportation of merchandise that the railroads have reached their limit of capacity for freight shipment, because of the impossibility of increasing their terminal facilities. There is not at the present time a manufacturing city in the zone above stated but what is choked with freight seeking an early destination. There is not a point on a road leading eastward out of Chicago and covering this territory where there is not an embargo against some character of heavy freight. If that is the condition now, what will the condition of freight shipments be when we shall have doubled our population, and doubled



GUARD LOCK AT DAM ACROSS THE MIAMI AND ERIE CANAL, BELOW DEFIANCE, OHIO—YET MORE EVIDENCE OF CANAL DEVELOPMENT



Photo by Haines, Conneaut, Ohio

A GLIMPSE OF THE HARBOR OF TOLEDO

TOLEDO HAS AN ENVIABLE STRATEGIC POSITION NEAR THE HEAD OF LAKE ERIE ON THE MAUMEE RIVER, WHOSE BANKS ARE LINED WITH GREAT INDUSTRIAL ESTABLISHMENTS AND WHOSE WATERS ARE ALIVE WITH MOTOR BOATS AND STEAMSHIPS.

effectually and completely establish competing rates for the transportation of this great volume of business as the construction of the proposed barge canal, because it would not only penetrate the greatest trade-producing centers of collection and distribution, but it would come into direct contact with more than 80 per cent. of the railroads of the country that now attempt to carry this freight. It is not possible that the interests of these numerous cities, these millions of people, this splendid commercial and rich agricultural region, are to be remitted to the railroads as the sole carriers of their production, when they are now taxed beyond every possible capacity to do the business. The people have not delegated all of their rights to the transportation companies. Among those they have reserved is that of having their merchandise carried to the markets of the world at the lowest remunerative rates, and carried without delay.

We have no quarrel with the railroads. They are an absolute necessity. We want them to carry all the freight they are capable of transporting, but with them we want sufficient additional facilities to transport the products raised and manufactured in the region through which they run, when they shall have reached their limit of service. If we shall have the assurance of adequate common carrier service, there is no limit to be placed upon the development of great sources of state and

national wealth in the territory bordering on the Great Lakes.

In what position will the numerous distributing Atlantic Coast cities be if it shall happen that in the not distant future the trade for exports from the Mississippi Valley shall go by way of the Great Lakes, into the Georgian Bay, into the canal that the Canadian government proposes to construct, out into Lake Ontario and down the St. Lawrence to the market cities of the world? Are the export cities on the coast anxious to regain and keep the grain trade prestige they once had? And do they realize the tremendous importance that the loss of this world of traffic would mean to their section? The Builder of this continent of ours left possible but two routes for the people living in the upper Central States to get to the world's market with their surplus product. One by way of the Gulf of Mexico and the other by way of the barge canal and the Erie Canal to the coast cities. The Gulf route is impracticable, because when we reach New Orleans, a thousand miles south of us, we are still more than a thousand miles farther away from New York and Boston and Philadelphia than when we started.

The Erie Canal, without the assistance and the carrying trade that we can give her, will not carry ten per cent. of the freight it is capable of carrying, once this western extension is completed.



Underwood & Underwood, N. Y.

FISHERMEN MENDING THEIR NETS AT THE JORDAN'S ENTRANCE TO THE
NORTH END OF THE SEA OF GALILEE

Set deep in the Palestine hills, of hallowed association, is the Sea of Galilee, the shores of which, at this time of the year, become verdant with tropical vegetation, although presenting a barren and desolate appearance at other seasons. Although measuring in its extent but sixty-four square miles, the Galilean Sea, according to geologists and historians, covered a much wider area in the time of Christ, who walked upon its waters and here accomplished the miracle of the feeding of the multitude with a few fish. The shores of the Sea are rich in archaeological remains and foundations and scattered stones cover the slopes and the flat valley below. In the midst of ruins near a rugged gorge on the western side are the remains of a synagogue of richly ornamental style constructed of black basalt. The foundations of another splendid synagogue, measuring 75 feet by 57 feet and built in white limestone, have been excavated. The modern Arabic name of the Sea is Bahr Tubariya.



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EASTER PILGRIMS THRONGING THE "VIA DOLOROSA," JERUSALEM

IT IS A MOTLEY, BUT A DEVOTEDLY REVERENT ASSEMBLAGE OF THE FAITHFUL FROM DISTANT LANDS THAT FOLLOWS THE "PATH OF SORROWS," LEADING FROM PILATE'S TRIBUNAL TO DREAR GOLGOTHA, TO TARRY IN PENANCE AT THE SEVERAL "STATIONS" WHERE CHRIST MOST SUFFERED



© Underwood & Underwood

THE FIRST STATION OF THE CROSS. ON THIS PAVEMENT OF SQUARED STONES CHRIST STOOD BEFORE PONTIUS PILATE

lamps hanging from the arches and the thousands of jets of flame from the candles in the hands of the worshipers. Beyond is the Sepulcher, enclosed in marble amid ikons and lamps of gold, and all the pilgrims kiss the cover of the tomb, an eternal procession.

No less brilliant and versatile a chronicler than Pierre Loti, in an account (in the *Christian Herald*) of his visit to Jerusalem at Easter, describes this Path of Sorrows:

"Here were the ruins of what had been the palace of Pilate, for there have been less changes here than in the neighborhood of Calvary. Here is the ancient Roman pavement, here are ancient walls by which Jesus must have passed.

"The road is darkening in the dying light of day. We hear the chants coming from the Chapel of St. Anne. The road runs upwards,

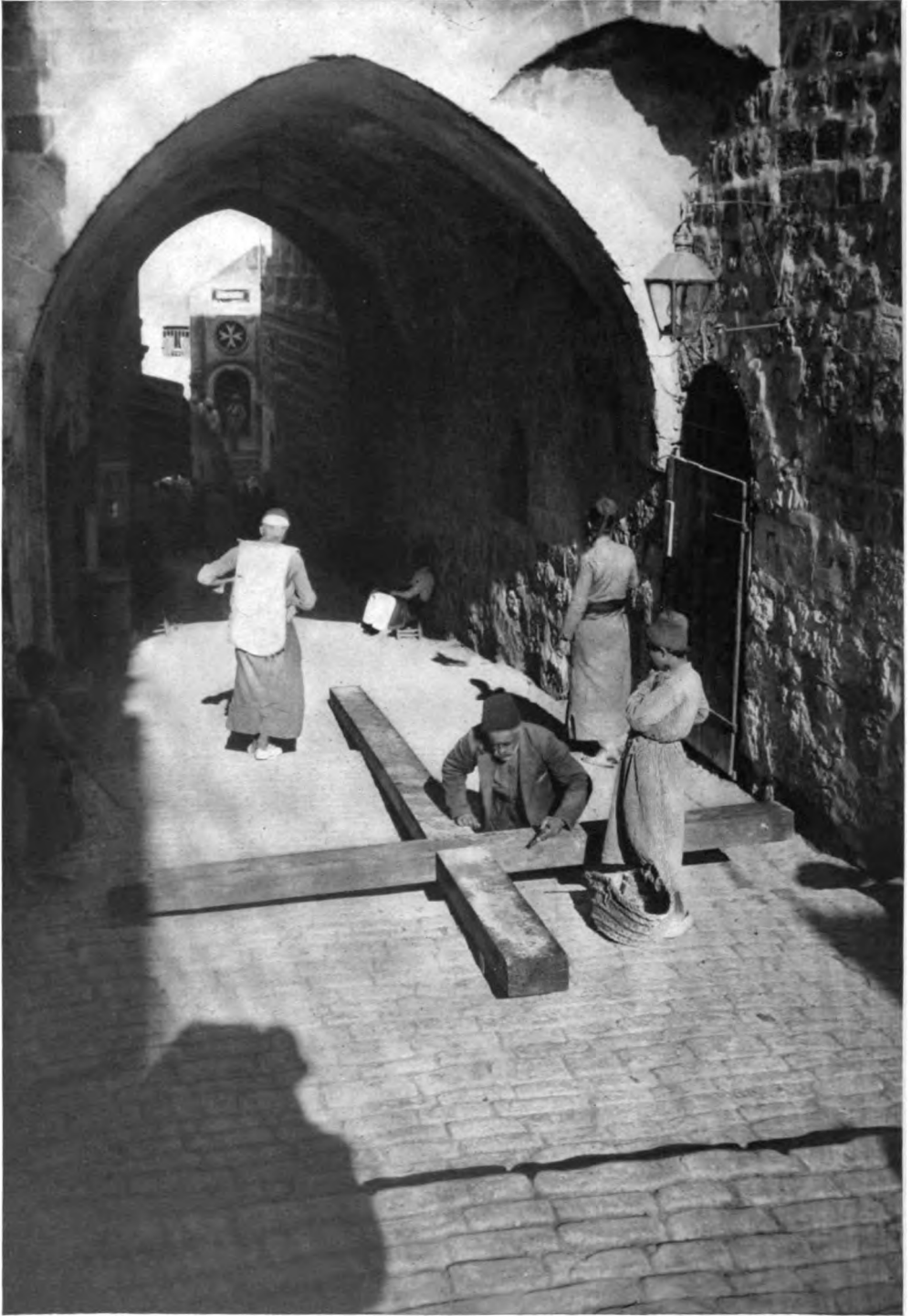
ALL roads lead to the Holy City at Easter time. Thousands of pilgrims journey from Syria, from Constantinople, from the Macedonian States, from Russia, Greece and the Peloponesus, from Egypt and Abyssinia and from distant Sicily, often suffering severe hardships and hunger, and more than one perishing by the roadside. They come to walk the Path of Sorrows trod by the Nazarene, to worship at the shrines of the Holy Sepulcher, shrines that girdle the very Rock of Calvary.

The streets of the City are lined with poor men and women, begging and singing; with praying pilgrims; with venders of crosses and chaplets. A maze of chapels and caverns surrounds the sacred altar, covering the stone of the Sepulcher—a great marble altar laden with silver lamps. The altars of the various confessions are so mixed up that there is a continuous marching of priests and processions. The darkness is everywhere studded with the lights of myriads of little silver



© Underwood & Underwood

IN SUPPLICATION BEFORE THE FIRST STATION, NOW THE CENTER OF A MILITARY BARRACKS FLANKING THE CASTLE OF ANTONIA



THE EIGHTH STATION OF THE CROSS
THE BLACK CROSS IN THE WALL OF THE GREEK MONASTERY OF ST. CARALOMBOS, SEEN THROUGH THE ARCHWAY, MARKS THE EIGHTH STATION, WHERE CHRIST IS SAID TO HAVE ADDRESSED THE WOMEN WHO ACCOMPANIED HIM



© Underwood & Underwood
GREEK ORTHODOX MONKS KNEELING AT SECOND STATION, MARKED BY PORTION OF ANCIENT WINDOW AT LEFT

does not seem to have changed in nineteen hundred years. * * * Here the apostles slept while Jesus went away into the garden to pray. And here amid the flash of torches was He taken * * * * Thence we traversed the very path back to Jerusalem along which Jesus must have walked on just such a night as this, facing his fate. There was the same moon shining upon us, the same deep shadows cast by the giant olive trees. The same breezes blew into our faces, and in the light of memory we could see that frail body struggling with the weight of impending doom, yet passing firmly onward in the night.

"When I left Jerusalem I could not but feel the spell of all I had seen. I felt that the Holy Sepulcher was indeed the soul of the city."

narrow and steep, between two ancient walls, by great arches. Other streets cross it, seeming dead, without windows, or other opening. *Hic flagellavit*, says a marble tablet set in a doorway. Here He was flagellated. This is the Chapel of the Flagellation, the beginning of the Road. Here is the Turkish prison, built upon the foundations of Pilate's palace, first Station of the Cross. All the other Stations as far as Calvary are marked by inscriptions or columns.

"I pass beneath the Arch of Ecce Homo, and hear the Daughters of Zion singing the praise of the Saviour. The way turns and twists its sad length, ever ascending. I reach the Seventh Station, the gate through which Jesus passed toward Calvary, and then past all the rest to the Sepulcher.

"But I wanted to visit Gethsemane, seen from a distance only. * * * * Other places have been disputed and questioned, but concerning Gethsemane there is universal agreement. The little altars, very old and simple, do not disfigure this grotto, which



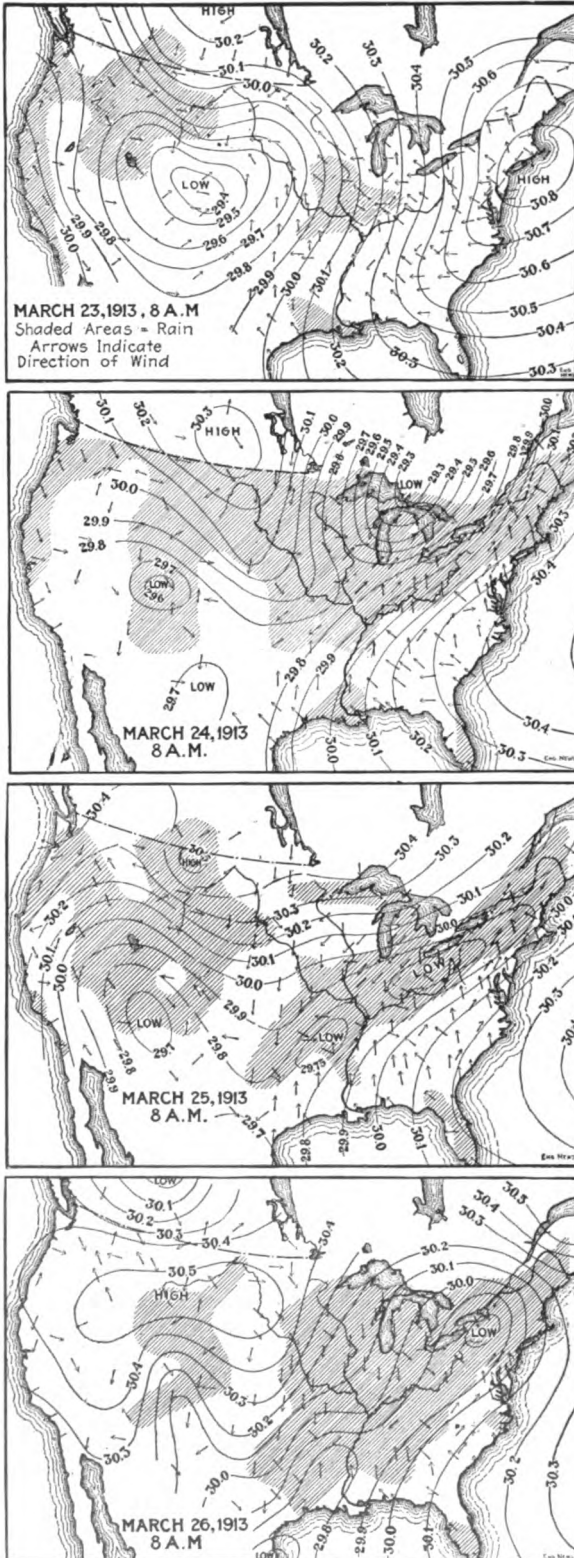
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DEVOTEES OF EVERY CLIME KNEEL IN CLOSE QUARTERS, GUARDED BY TURKISH SOLDIERS, ARMED AS IF FOR MASSACRE

BY TEMPEST

THE three great cyclonic storms that swept over the country in the latter part of March—with the hurricanes, tornadoes and torrential rains by which they were accompanied and the floods by which they were followed—scattered death and destruction over a territory larger than that of any nation in Europe, except Russia, and wrought a greater damage to property than was caused by the Chicago fire or the San Francisco earthquake. The first frantic appeals sent out for help indicated that the loss of life would also be greater than that caused by any other disaster in the country's history, but happily this proved to be untrue, the number of lives directly lost by storm and flood being only about one-half as great as at Johnstown and one-tenth as much as at Galveston.

The first of the three cyclonic storms made its appearance in British Columbia on March 17, swung southeastward into Colorado, then turned sharply to the northeast and passed down the valley of the St. Lawrence to the Atlantic Ocean. The second was formed in Utah on March 19, swept through New Mexico into Texas, and then, turning still more sharply to the northeast, also went down the St. Lawrence Valley. Before the second storm was fairly out of the way a third one formed, on March 22, in Nevada, and moved, first eastward across Utah and Colorado, then northeastward through Nebraska, Iowa and Michigan and on down the St. Lawrence in the track of the other two.

Friday, March 21, was an unlucky day for practically the entire country east of the Rocky Mountains. Gales raged far and wide, observed velocities being reported of 64 miles per hour at Memphis, Tenn., 84 miles at Toledo, Ohio, and 88 miles at De-



Courtesy Engineering News

AND FLOOD

troit, Mich., and Buffalo, N. Y. Blizzards west of the Mississippi tied up railway traffic, telegraph and telephone wires were blown down, roofs torn off and plate glass demolished by the acre. Deaths from falling chimneys were reported from Michigan to Texas, and a number of small towns in Missouri, Arkansas, Tennessee, Louisiana and Alabama were demolished by tornadoes, with a loss of some 50 lives and a much larger number injured.

A cyclone is a general storm, which may be from 100 to more than 1000 miles in diameter, and in which the winds revolve around an area of calm as a center. This calm area moves forward from west to east at a rate which may be as much as 40 or 50 miles per hour. A tornado is defined by the Chief of the Weather Bureau as "a violent revolving local storm of small diameter and great intensity." Tornadoes are often developed in connection with a cyclone, like individual eddies in a swiftly moving stream. Tornadoes, in the northern hemisphere, occur almost entirely along the southerly edge of the cyclone, are usually of small diameter and run a course of only a few miles. No method has ever been devised for measuring the velocity attained by the wind in a tornado. It must be at least 200 miles per hour, and some writers declare that certain phenomena—such as the driving of straws into an oak plank—can be accounted for only on the theory that the velocity is from 1500 to 1800 miles per hour.

On the night of Easter Sunday, March 23, tornadoes occurred in Nebraska, Missouri, Iowa, Illinois and Indiana. Many buildings were wrecked and several lives lost in the northwestern part of Chicago and still greater damage was done at Terre Haute, Ind., and in the village of Prairie-



HOUSEHOLDERS SEARCHING RUINS OF THEIR HOMES FOR BODIES AND VALUABLES NEAR HAMILTON AND THIRTIETH STREETS, OMAHA



JUDGE W. W. SLABAUGH, A PROMINENT OMAHA LAWYER, COLLECTING HIS BELONGINGS AFTER THE TORNADO WRECKED HIS HOME



Photos by Underwood & Underwood, N. Y.

WHAT WAS ONCE THE TOWN OF LOWER PEACHTREE, ALA. SIX HOUSES STOOD WHERE THE X'S ARE

ton, six miles south, where 25 deaths were reported. The heaviest toll was taken, however, by the tornado which burst upon Omaha, Neb., a little before seven o'clock in the evening and cut a swath of ruin six miles long, and of the extraordinary width of from a quarter to a half mile, before it crossed the Missouri River to spend the remnants of its fury upon the neighboring city of Council Bluffs, Ia. One hundred and thirty lives were snuffed out, scores and hundreds were injured, more than 1700 houses damaged, 700 of which were either completely destroyed or so badly wrecked that they must be rebuilt, and 2500 to 3000 people were rendered homeless, some of whom lost everything they possessed.

It would seem that this was enough and more than enough, but all that has been outlined up to this point was only a prologue to the tremendous tragedy which was to follow. In the abridged Weather Bureau maps which appear herewith, and which are reproduced by the courtesy of *Engineering News*, the isobars (or lines of equal pressure) and wind arrows are given, and rain areas are indicated by shading, but the isotherms (or lines of equal temperature) are omitted for the sake of clearness. The maps, which indicate conditions at 8 a. m. from Sunday, March 23, to Wednesday, March 26, show that the low-pressure area became more concentrated as it moved to the northeast. It was accompanied by a downpour of rain which has no recorded equal in the United States for volume, rapidity and long continuance. The forecaster of the Weather Bureau states that "there have been heavier rainfalls in restricted areas before, but such a heavy precipitation extending over three or four days in such a large area is unprecedented."

As summed up by *Engineering News*: "An extraordinary rainfall occurred over the whole north-central area from Illinois to New York, with less heavy rain southwest and east of this area. These rains began Saturday, becoming concentrated Sunday and Monday, and continuing more or less until Thursday, March 27. The north half of the valley of the Ohio River was deluged. Roughly stated, over 5 inches of rain fell in three days on a region of about 150,000 square miles between the Great Lakes and the Ohio.

There was a precipitation of from 1 to 6 inches over the entire territory from the Missouri River east to the Alleghenies, and from the southern tier of states to the Canada line."

This unprecedented downpour fell upon a soil unable, because already saturated, to absorb any additional moisture, and the result was that every stream from the Wabash, on the Illinois-Indiana boundary line, to the Connecticut, was flooded, and on most of them all previous records were broken. Ft. Wayne, Huntington, Wabash, Marion, Elwood, Kokomo, Winchester, Muncie, Richmond and other Indiana cities reported damage from floods, the greatest loss of life occurring at Indianapolis, Brookville and Peru.

But the center of the terrific downpour was in Ohio, a precipitation of 9 inches in three days being reported from Wooster, 10.6 inches from Marion and 11.16 inches from Bellefontaine. Fremont, Findlay, Tiffin, Akron, Cleveland and other cities on the Lake Erie watershed reported serious flood conditions, the Cuyahoga River at the head of navigation in the latter city, $5\frac{1}{2}$ miles from the lake, reaching a height of $19\frac{1}{2}$ feet above the normal stage. Piqua, Dayton, Middletown and Hamilton on the great Miami; Delaware, Columbus and Circleville on the Scioto; and Zanesville on the Muskingum bore the brunt of the disaster. The death roll for the State is set down at 454, of which Dayton furnished 150, Columbus 89, and Hamilton 72.

Youngstown on the Mahoning, in eastern Ohio, and Sharon and Newcastle on the Shenango, in western Pennsylvania, also suffered heavy loss from high water. The Genesee, at Rochester, was higher than at any time since 1864, the Hudson at Troy and Albany reached a stage higher than ever before recorded, and the cities on the Connecticut and scores of places which cannot here be named suffered losses, serious in themselves, but which are overshadowed by the destruction of life and property in Ohio cities.

To all that has thus far been mentioned must be added the losses in the cities along the Ohio River, for every city on both its banks from source to mouth was flooded. In Pittsburgh the highest point was 30.4 feet, which is five feet below the record stage, 35.5, which was reached in 1907.



CITIES BOTH EAST AND WEST SUFFER HEAVY LOSS FROM FLOODS

- 1 Record-breaking Rise in the Hudson at Troy, N. Y. (*Underwood & Underwood.*)
- 2 Burning wholesale district of Dayton, showing lone member of the fire department. There was no smoke from the fire. Great clouds of steam rolled from the burning buildings. At the time this picture was taken this district was under water from 3 to 15 feet deep. Looking east in Third Street from Jefferson. (*Eugene Cour, Chicago.*)
- 3 Crowd of refugees and relatives watching rescuers as they arrived at the home of Mrs. May Mains, West Indianapolis, Indiana, with flood victims from No. 16 School. Taken from C. H. & D. R. R. tower house. (*Eugene Cour, Chicago.*)
- 4 Showing the inundated section in the vicinity of the Market Street viaduct, Youngstown, O. (*Underwood & Underwood.*)



Underwood & Underwood, N. Y.

TO SAFETY BY CABLE—AN INCIDENT OF THE DAYTON FLOOD

LIFE LINES HASTILY STRETCHED ALONG THE STREETS SAVED MANY LIVES. WHEN THESE WERE OVERFLOWED, THE TWO MEN SHOWN IN THE PICTURE CLIMBED A TELEPHONE POLE AND MADE THEIR WAY TO SAFETY ALONG THE CABLES

At Cincinnati the river stopped at 69.8 feet, as against 71.4 feet in 1884. But practically every other point on the river reported flood heights in excess of all previous records.

The total value of the property destroyed can never be known to a certainty. Governor Cox, of Ohio, estimates the loss in that State alone at \$348,000,000, divided as follows: railroads, \$103,000,000; traction lines, \$20,000,000; counties, \$45,000,000; cities, \$15,000,000; buildings, \$50,-

000,000; merchandise, \$60,000,000; public utilities, \$25,000,000; furniture, clothing, jewelry, etc., \$15,000,000; miscellaneous, \$5,000,000. The estimate of the Red Cross is nearly \$100,000,000 less, or \$250,000,000. Either figure is large enough.

How hard the railroads were hit may be judged by the fact that for a time through service was suspended on every east and west line in Ohio, except on the Lake Shore & Michigan Southern, which runs close to the shore of Lake Erie. Tracks, sidings, heavy bridges of steel, concrete or stone, yards, stations, shops, terminal buildings, signal apparatus, interlocking machinery, telegraph lines, rolling stock, lumber and other expensive materials of many kinds—all were wrecked or carried off by the torrents. It will be weeks before the service can be restored to its former efficiency, and months before repairs and rebuilding can be completed. The almost total cessation of railway communication—which was not confined to Ohio but included much of Indiana and portions of West Virginia and Pennsylvania—made the work of rescue and relief doubly and trebly difficult. Something of the invaluable serv-



Courtesy Washington Post

NECESSITY OVERRULES CONVENTIONALITY—DAYTON WOMEN IN RUBBER BOOTS AND OVERALLS HELP TO CLEAN STREETS



THREE NOTABLE FIGURES IN THE WORK OF RELIEF

From left to right the figures are: Maj. Gen. Leonard Wood, Chief of Staff, U. S. Army; Lindley M. Garrison, Secretary of War; and John H. Patterson, President of the National Cash Register Co., and Chairman of the Relief and Citizen's Committees of Dayton. When the flood came everything and everybody connected with the great plant of the Cash Register Co. was devoted to the work of rescue and relief. Boats hastily built saved hundreds of lives. Mr. Patterson himself repeatedly stood for long intervals in water up to his hips and once leaped into a boat and brought a whole family to safety. Martial law was proclaimed by Governor Cox and the militia were under the orders of Mr. Patterson, who was for days practically the dictator of Dayton. Before the waters had subsided he was planning to prevent floods in the future and has secured the appointment of a Board of Army Engineers to study the problem.

Courtesy Washington Post

ice rendered by motor cars and motor trucks when the locomotive was helpless is told elsewhere in these pages.

The greatest loss of life and property occurred at Dayton, a thriving city of some 135,000 population, which lies on both sides of the Great Miami River, about 65 miles north of Cincinnati. Three smaller streams join the Miami just above the city, the watersheds of all four lying within the territory in which the rain-fall was from 6 to 11 inches on the level; under such conditions a flood was inevitable. Dayton had suffered from floods before and had constructed levees designed to hold back a stage of 23 feet, but even if these had not broken, as they did on the morning of March 25, they would have been overtopped by six feet.

The flood would have been just as deep if the levees had held, but there would not have been that first terrific rush of water which swept down Main Street so swiftly that nothing less speedy than a high-powered motor car could escape it. While one

taxicab driver was cranking up the muddy water smothered his engine, drove him first into his machine and then to the top of it, and a few minutes later compelled him to swim for his life. Street cars were overturned, plate glass windows were smashed and stocks of goods swept into the street. Hundreds of horses swam frantically about



Underwood & Underwood, N. Y.

POLICE AND VOLUNTEERS WITH LIFE LINES FOR RESCUE OF PEOPLE CARRIED DOWN FLOODED STREETS ON WRECKAGE



Courtesy Washington Post

LOOKING ACROSS THE OHIO FROM COVINGTON, KENTUCKY, TO CINCINNATI
 THE OHIO RIVER AT CINCINNATI REACHED A STAGE OF 69.8, AS AGAINST 71.4 FEET IN 1884 AT PRACTICALLY EVERY OTHER
 POINT ON THE OHIO THE FLOOD OF 1913 WAS THE HIGHEST ON RECORD

trying to climb on doorsteps or force their way through windows. One dead horse was found, after the water receded, lying on top of a grand piano in a parlor.

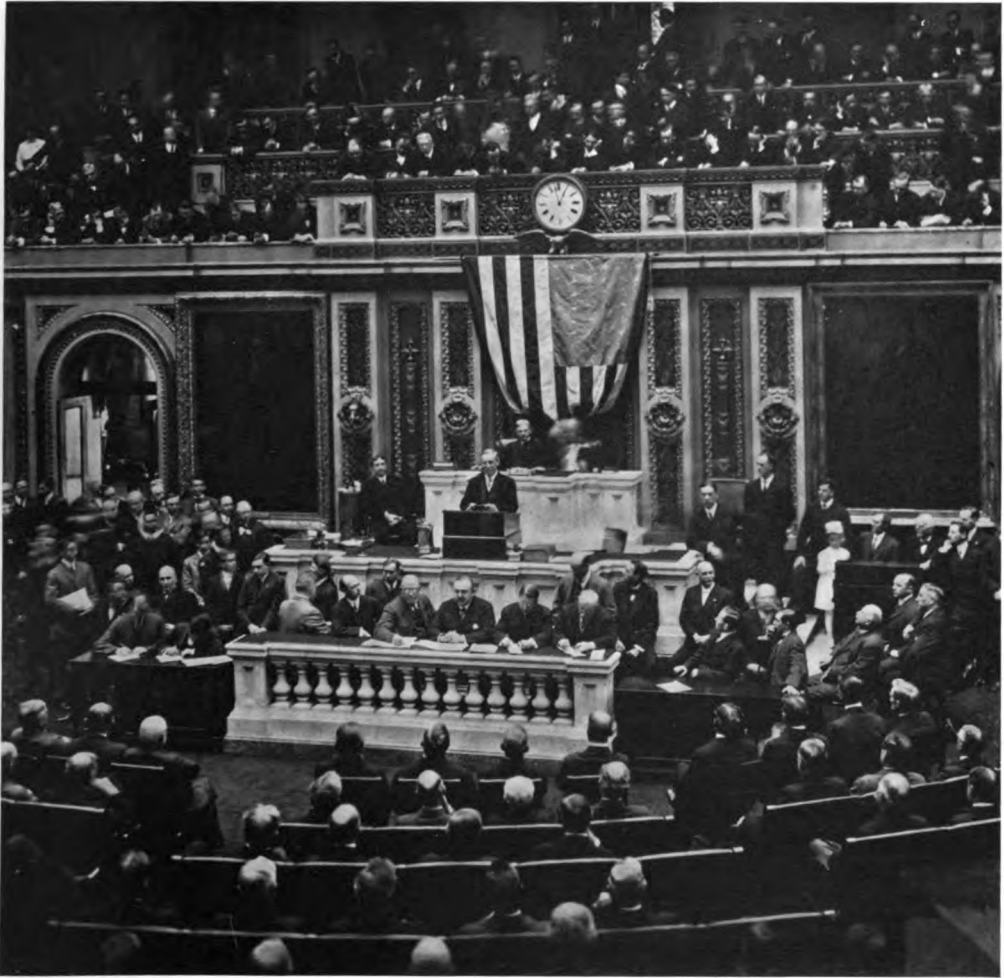
Hundreds of pedestrians were swept off their feet and thousands of human beings were sent madly climbing up telephone poles or into trees, or forced first to the upper stories of their houses and later to the roofs. Many of the smaller and frailer houses were crushed by the first rush of waters, while others were lifted from their foundations and whirled away by the angry yellow flood; some carried their human freight to safety when they grounded in shallower water, others were dashed to pieces against more substantial buildings or one of the bridges which spanned the Miami.

The terrors of the day were multiplied with the coming of night, when 50,000 to 60,000 people in Dayton alone were marooned without heat, or food, or water fit to drink, or any light but that from the fires which there was no way to check and which, to the anxious watchers, seemed about to sweep the whole city and destroy all that the waters had left.

The scenes of ruin revealed when the waters receded were appalling. Throughout the flooded area homes, factories and stocks of merchandise, where not completely wrecked or swept away, were water-soaked and covered inches deep with slimy mud. Dead animals strewing the streets, polluted water supplies and broken sewers threatened the coming of pestilence. The task was not ended when the living had been rescued and fed and the dead had been decently buried—it was just begun. More than 100,000 people are homeless in Ohio alone.

But if the task is tremendous, so also are the resources available for its doing. There were many men who worked untiringly to save the lives of others until they lost their own. There are many more who are ready to help rebuild the ruined homes, repair the ravages of flood and fire, and not merely restore conditions as they were, but make them better than before. The National Government, the State Governments and the Red Cross are all enlisted in the work—but the greatest resource of all is the unconquerable courage of the survivors of the disaster themselves.

CENTURY-OLD PRECEDENT BROKEN



© Harris & Ewing

BRIDGING the gap that separates the present and the past, and reviving an old custom that was abandoned when Thomas Jefferson came to the chair of state. President Wilson is here seen reading his address to the Houses of Congress in the Hall of the House of Representatives on Tuesday, April 8, making an epochal occasion in the life of the American republic.

The address, as it must be called, was nevertheless a message, in the sense that it was a clarion call to the representatives of the people to enact tariff legislation at an early date, to the end that the indus-

tries of the country might adjust their business in conformity to the changed conditions.

Not as a cog in a machine, not as an impersonal political entity, nor "as a mere department of the Government, hailing from some isolated island of jealous power," but as a President, "who is a human being, trying to co-operate with other human beings in a common service," Woodrow Wilson went to Congress on this very memorable occasion that is still the talk of the Nation, thereby winning for himself an exalted place as a doer of things and not a dreamer of them.

VIEWS & REVIEWS

GREAT disasters bring out the best and the worst in human nature. They strip off the veneer of conventionality and show whether the fibre of the underlying character is sound and straight or warped and rotten. From the cities recently stricken by storm and flood there come stories of sorrow and suffering to wring the stoutest heart, tales of grasping selfishness and open-handed generosity, of courage and of cowardice, of tragedy and comedy, of hope and despair, of situations more dramatic than were ever portrayed on any stage.

The Human Side of the Floods

A railway man in Dayton, who was marooned in his office for three days and nights, tells of seeing two men, a woman and a little girl who clung for hours to the branches of a tree, while pouring rain and driving snow drenched their garments and chilled them to the bone. Presently a house drifted down and lodged within reach, and the men, after beating a hole in the roof with their bare hands and placing the woman and girl inside, took off their clothing and passed it down to them. When the rescuers came in boats the next day they took away the woman and the child, alive—but left behind the men, lying dead and frozen on the roof. No braver deed was ever done upon a battle-field.

A few looters were shot, among them one with heart even blacker than his face, who had in his possession a woman's hand, severed at the wrist, the fingers of which were ablaze with precious stones. But for every one like that there were a hundred ready to risk their lives to save others. The coming of danger and the beginning of the work of rescue were practically coincident. Every rope within reach was put to use, every available boat was sent speeding on a mission of help. One young man is said to have saved over 200 lives with his motor boat before he lost his own. Two athletic brothers in Dayton saved 200 people with their canoes. That they themselves are alive is due to Providence or fate, for both dared death again and again. National guardsmen in Columbus, on duty all day and sometimes half the night in drenched clothing, slept on the stone floors of the State House corridors and went at it again next day. Members of the Naval Reserve, from Toledo, worked 71 hours without rest or sleep.

People living adjacent to the flooded territory gathered up supplies and rushed them by all available methods to the sufferers, and throughout the whole country contributions of money, clothing and provisions began pouring in upon the agents of the Red Cross. More than \$1,500,000 had been turned into the treasury of this splendid organization when these lines were written, and the funds were still coming in.

A SPECIAL word of appreciation is due Mr. John H. Patterson, President of the National Cash Register Company. Fortunately for Dayton, this great plant, which covers an area equal to eight or ten city blocks, was on high ground which the waters did not reach. When the

flood came Mr. Patterson ordered all business suspended and everything and everybody about the institution was turned over to the work of rescue and relief. Boats were turned out from the carpenter shop at the rate of

one every five minutes until 200 had been built and sent out to take people off of roofs or out of second-story windows. *Dayton's* Mr. Patterson himself repeatedly rushed into the water to help some one struggling toward safety, and once leaped into a boat and saved a whole family. *Leading* The same executive *Citizen*

ability that enabled him to build up a business so large that the Government prosecuted him for violation of the Anti-Trust laws, made him the natural choice for Chairman of the Relief and Citizen's Committees, and for days he was practically the dictator of Dayton. Everything centered in and radiated from the plant of the National Cash Register Co., with Mr. Patterson as the *deus ex machina*. Even while the relief work was going on he was looking ahead and seeking national aid to prevent a recurrence of the disaster. Whatever the Government may think of some features of his business activities, he deserves unstinted credit for his wholehearted and efficient help in Dayton's great disaster.

Some years ago, at the Imataca iron mine on one of the labyrinthine channels in the delta of the Orinoco River, in Venezuela, some Guaraunos Indians were employed in making thatched roofs. When one of them fell off a ladder and broke his leg his companions promptly moved him a little to one side—because he was in their way. The contrast between this incident and the outpouring of sympathy and help for the sufferers from the floods measures the difference between barbarism and civilization.

PRESIDENT WILSON brushed the red tape completely aside and ordered troops, tents, rations, medical and surgical supplies, life boats and crews, Army Engineers and officers of the Public Health Service

to the scene of the disaster, confident that Congress, when it should meet, would sanction this rushing of help to the suffering thousands in advance of direct authorization. *Red Tape* Secretary of War Garrison and Maj. Gen. Leonard Wood, Chief *Properly* of Staff, went to the stricken cities as quickly as disorganized *Discarded*

railway communication would permit, and President Wilson was ready to follow if his presence seemed advisable. All along the line action was swift and decisive. For instance, when the Commandant at Fort Omaha learned of the damage caused by the tornado he instantly ordered out his men to co-operate with the police and the militia in rescue work and guard duty.

HOW vitally important the railway is to the industrial and commercial interests of the Nation could only be fully realized through the almost complete stoppage, over a wide territory, of railway operation following the floods. Although the railways suffered loss and

damage greater than that of any other single interest, the first thought of the men in charge of them was to do all in their power for the work of relief. Wherever train movement was possible, supplies for the sufferers were given the right of way and carried free of charge. Stations, shops and other railroad buildings were thrown open to shelter the homeless, and railroad restaurants dispensed food gratis. Railway corporations may have no souls, but the men who

operate the roads certainly have. The roads not only helped the public but each other. Wherever a piece of track was fit for operation it was available for detouring trains of other roads. Credit must also be given for the splendid energy shown in beginning and carrying on the work of repair. Almost before the floods had reached their crest the Baltimore & Ohio, for instance, had assembled 6,000 men between Parkersburg and Pittsburgh who were ready to begin the work of reconstruction at the earliest possible moment.

Most gratifying of all to every American who believes in and loves his nation is the unconquered and unconquerable spirit manifested by the people of the states and cities ravaged by storm and flood. Omaha, with 130 dead, hundreds more injured, 3,000 homeless, 700 houses completely wrecked and 1000 more badly damaged, sent out word that she needed no outside help. Merchants put up signs as soon as they could get into their water-soaked establishments, announcing that business would be resumed as soon as new stocks could be brought in. Manufacturers, for the double purpose of getting into operation again and giving employment to those sorely in need of it, set every available man to cleaning up, while some, like Griffith & Wedge, of Zanesville, announced that they intended to replace their old machinery with new and fit up both offices and shops in more modern style, in order to take care of the bigger business that they feel sure they are to get. The waters had hardly receded when Governor Cox of Ohio—who measured up to all the requirements of the sudden and tremendous emergency which confronted him—sent out from Columbus this ringing statement: "Refreshed by the tears of the American people, Ohio stands ready from to-day to meet the crisis alone."

EVERYBODY agrees that everything possible ought to be done, but there is a wide difference of opinion as to how much can be done and just what ought to be done, to prevent a recurrence of these disastrous floods. The floods in the rivers have been followed by a veritable flood of suggested plans, ranging in value from those put out by crack-brained cranks to those advocated by men of ability who have given the subject thoughtful attention. One man sought the support of NATIONAL WATERWAYS for his scheme to prevent overflows in the Mississippi Valley by building a series of concrete conduits from the neighborhood of Cairo to the Gulf of Mexico, into which, he insisted, the flood waters should be poured instead of being compelled to force their way as at present. He thought five of them, 100 feet wide and 10 feet deep, would be enough—but maybe it would take 12. No, he hadn't figured the cost—he would leave that for the engineers.

There is a general agreement that further encroachments on our rivers must be stopped and a strong advocacy of the deepening, widening and straightening of channels. Work of this kind on the tributaries would send their storm waters more swiftly down to the main streams and make flood stages in the latter higher than they are at present. Others advocate the holding back of rainfall by reservoirs and reforestation. In succeeding numbers of NATIONAL WATERWAYS there will be presented articles from prominent men who favor different methods. The problem is complicated and difficult; the solution, if found at all, will be found only after a thorough study by experts; and the remedy, whatever it is, is certain to be costly.

*Plans for
Prevention
of Floods*

IN THE decision rendered in the case of *Augusta and Savannah Steamboat Company vs. Ocean Steamship Company of Savannah, et. al.*, the Interstate Commerce Commission uses the authority, conferred upon it by Section 11 of the Panama Canal Act, to establish through *Commission* routes and maximum joint rates between rail and water *Applies* lines. The Ocean Steamship Company and the Merchants *Section 11.* and Miners Transportation Company, which operate steamship lines between Savannah and New York, Philadelphia and other North Atlantic ports, had joined with the Augusta and Savannah Steamship Company up to 1905 in making joint rates from Augusta to interior destinations reached from the North Atlantic ports named. Since that date they have refused to participate in the making of such rates, but must now do so.

The contention of the defendant steamship companies that they were not subject to the authority of the Interstate Commerce Commission was overruled because it was shown that they participate in through rates on a joint route made up of rail from Augusta to Savannah, steamship to New York or other port, and rail to destination. Their further claim that they were willing to make a joint rate in case this was made the same by the complaining steamboat company as by the rail-water-and-rail line mentioned, called out these words from the Commission:

"If these carriers are allowed to insist that this steamboat line shall make no lower rate than is made by the rail line, the inevitable result must be the going out of business by the steamboat company. If the railroads serving Augusta can say, as they are attempting to here, that the water rate shall be no less than the rail rate, then they can say that Augusta shall not be given the legitimate advantage of its location. Not only can they prevent any further reduction in rates at that point, but they can advance those rates which water competition has already secured."

The decision in this case, which was presented on behalf of the complainant by Mr. H. S. Kealhofer, Manager of the Traffic Bureau of the Augusta Chamber of Commerce, is of importance not only to Augusta but to every city located on an interior waterway.

THE 1913 edition of the Good Roads Year Book of the United States, which has recently been issued by the American Highway Association, shows that the proportion of improved roads increased from 8.66 per cent. at the end of 1909, to 10.1 per cent. on December 31, 1911. *Progress in* The net gain of 1.44 per cent. does not look very impressive *Building* in terms of percentage, but it means that in the two years *Good Roads* named over 34,000 miles of improved roads were constructed in the United States, or 10,000 miles more than the total length of national roads in France.

The Year Book shows \$137,000,000 of state road bonds authorized, and reports from about 75 per cent. of the counties in the United States give \$156,500,000 of county bonds outstanding, on January 1, 1913. Reports from all counties would probably bring the total up to \$350,000,000. Bonds amounting to ten or fifteen million dollars, voted in 1912, are not yet issued.

S. A. THOMPSON.



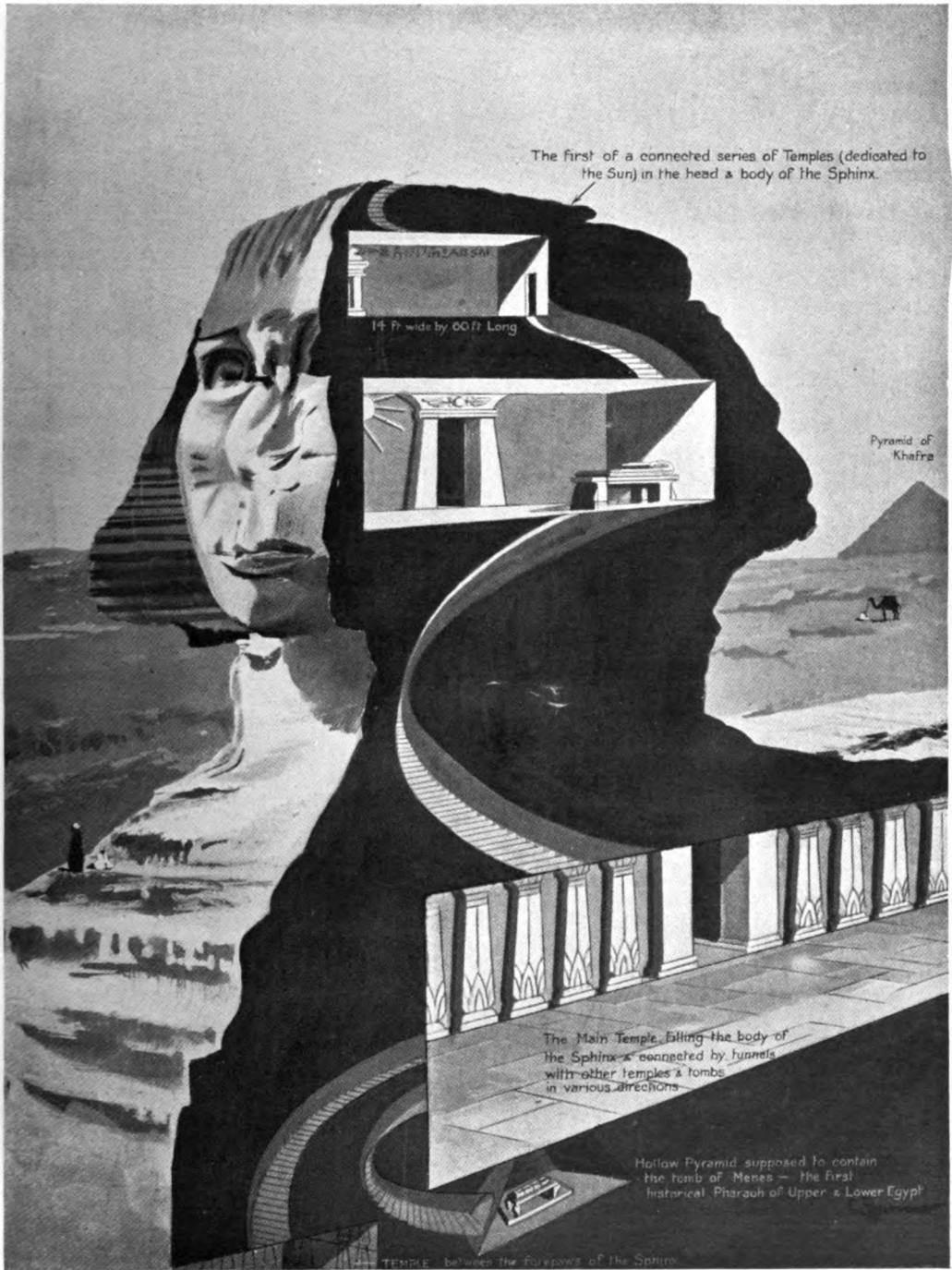
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MOTHER NATURE'S "FIRELESS COOKER AND THERMAL BATHS," AUCKLAND, NEW ZEALAND

Maoris who live in the geyser region 150 miles southeast of Auckland allow Mother Nature to do their cooking for them. No need for them to build a fire, a box or a basket or a bag, depending on what they are preparing, is all that is necessary. They sink the receptacle in the hot, moist mud over a steam hole, making an admirable oven. Besides cooking their meals, the women do their washing in these baby volcanoes.

The government of New Zealand controls all the geyser region, with the wonderful health-producing springs, and maintains hotels and sanitoriums at the various spas. The springs are declared to possess the most wonderful healing qualities in the world, and the charges fixed for their use are moderate.

In the smaller picture the young ladies are shown enjoying a Turkish bath *a la mode*. The water "tap" is from a convenient spring. The larger picture is of three Maori women waiting for their meat and potatoes to cook. They are hospitable people and invariably invite strangers to dine with them. Although they are warmly clad, they go barefoot, as the ground is extremely warm from the subterranean heat. It will be observed that the woman holding the baby is smoking a pipe, the entire race being inveterate users of tobacco.



HARVARD MAN REVEALS SECRET OF THE SPHINX

Through the courtesy of the *London Sphere* this graphic drawing of Mr. G. Bron is presented to NATIONAL WATERWAYS' readers. This diagrammatic view is of the remarkable discoveries now being made by Professor G. A. Reisner, Egyptologist of Harvard University. He is unveiling a series of hidden temples within the natural rock of which the Sphinx is formed. The drawing given above is only approximate in its details, as the measured drawings now being made by the explorer are not yet available. The temples and stairways are, however, shown in their relative positions. Not only is the head of the Sphinx occupied by two small chambers, one superimposed above the other, but the actual body of the Sphinx is also occupied by a larger pillar-lined temple with passages leading off in several directions. The actual tomb of Menes, the great but mysterious founder of remote Egypt, is also supposed to be within the Sphinx. The most remarkable discoveries may be looked for at any time.

AUTOS AS LIFE-SAVERS AT DAYTON

By HARRY A. TARANTOUS

RACING ahead of the raging torrent of the overflowing Miami River, in the awful hour of inundation at Dayton, swift modern touring cars fulfilled a public service that may be likened to the "Ride of Paul Revere." Automobile experts and dealers the country over have been attracted by the showing made by the vehicles in reducing the toll of human life exacted by the waters. Not only in Dayton did the motor car show its mettle, but also at Indianapolis, Columbus and other cities on the banks of the Ohio, Wabash, White and Miami.

As the first surging, seething mass of water rushed down Main Street, in Dayton, motor trucks and touring cars were hastily pressed into service and sent speeding through the broad thoroughfare ahead of the flood. Many small cars, unable to attain a speed of fifty miles an hour, were overtaken by the deluge and overturned, their drivers and occupants, in some cases, being drowned or dashed to death against the buildings. But the big autos contrived to spurt ahead and maintain their lead, while their operators kept their sirens sounding constantly as they called frantically to the crowds that heard their words with blanched cheeks, "The flood is coming!" "The flood is coming!" Thus warned, hosts of people were enabled to gain upper stories of buildings or reach a higher level before the angry waters bore down upon them.

It was not only at the onset of the flood that the autos were invaluable, for after the water had attained a stage of four feet and men, horses and other living creatures were perishing, the mighty, throbbing motors spelled safety to hundreds and thousands who otherwise would have lost their lives. Trains, trolley-cars and horse-drawn vehicles of every character had been reduced to absolute helplessness as though swept from the face of the earth, but the automobiles plugged and plugged until a way was made to pathetic little groups of survivors in sore need of help—and carriage to safety!

As the great number of cars regularly

maintained for pleasure driving and business purposes at Dayton proved to be of the utmost use, so likewise, cars which were hurried to the city from nearby centers rendered prompt and efficient aid.

Some of the cars had to plow through three feet of water in order to get out of the flooded area. Most of them got through safely, but a number were caught in the already fallen trolley wires, and held fast. Others could not get traction on the slippery streets. Often the water got into the carbureter, and under such conditions motor operation is impossible. Then it only remained for the driver to swim to a place of safety and leave the motor car to its doom.

After the water had left the streets of the city of Dayton, the real work of saving was begun. People who had been forced to the housetops for protection were taken to places of shelter. Motor cars rushed about the streets, carrying twice as many people as they ordinarily would, and transported them to towns nearby. From those who remained "Food!" was the cry, and again the motor car was the benefactor. Cities on all sides gathered up great quantities of supplies, but these supplies could not be sent to Dayton by train. What the locomotive could not do was accomplished by motor cars and motor trucks which came speeding from all directions to the relief of the famishing thousands.

As soon as the directors of the Speedwell Motor Car Company, in North Dayton, heard that water was fast filling the streets, every available motor was thrown onto a chassis and hurriedly put into service. In all, the Speedwell Company sent seventy touring cars and ten motor trucks through the streets of Dayton to pick up those who had been unable to get assistance. One batch of Speedwells went immediately to the hospitals and carried many invalids to safety.

Nor were the Speedwell directors alone in their great work. The Stoddard-Dayton Company, also in Dayton, rushed all available cars in the factory to the stricken people. When the news reached Spring-



"PASS THIS RELIEF CAR" WAS THE PLACARD BORNE BY EVERY AVAILABLE MOTOR CAR. WITH SIRENS SCREAMING AND DAUNTLESS DRIVERS AT THE WHEELS, THE MOTOR CARS SPRANG FEARLESSLY TO THE TASK OF RESCUE AND WARNING, BUT DESPITE THEIR EXPRESS TRAIN SPEED THE MAD RUSH OF THE ON-COMING WATERS WAS EVEN MORE—

field, the Kelly-Springfield Truck Company and the Packard Motor Car Company's agent there sent, together, about fifteen trucks. These traveled under their own power from Springfield to Dayton in record time, and aided greatly in the work of rescue and relief. Every individual owner who was able to get his machine out of the garage made his car a public conveyance.

Every motor car running about the streets of Dayton after the floods had receded bore a sign: "Pass this Relief Car." The few horses left were used to haul away the drifts of sand and dirt which were deposited on the thoroughfares by the water.

The motor car did heroic work at Dayton, and so did the men connected with the industry, but they suffered, too. The plant of the Stoddard-Dayton Company had the lower floor washed out completely, many of the office records floating away. It is said that in

one of the buildings of the Stoddard-Dayton plant a number of people lost their lives. They ran into an office for safety, but were caught by the onrush of water. It is estimated that the money loss is close to \$15,000. The plant of the Dayton Engineering Laboratories Company is in the heart of the flooded section. It also had the lower floor washed out, the loss approaching \$10,000. This factory was in operation day and night before the flood reached the city. Being upon slightly higher ground than the rest of the factories, the plant of the Speedwell Motor Car Company was not at all damaged by the mad rushing waters.

That great credit is due the chauffeurs and auto trade men who assisted in the rescue work at Dayton goes without saying, and the annals of the flood in the valleys of Ohio will chronicle the signal part played by the motor car in the memorable disaster of 1913. One cannot help but wonder how much more of death and suffering there would have been if the floods had come in the days before the auto was known.



SWIFT AND FREQUENTLY ENGULFED THE PROUD MOTOR CAR, TOSSING IT AMONG THE STRUGGLING HORSES OF THE STREET AS THOUGH NATURE IN A CYNICAL MOOD WISHED TO ILLUSTRATE ONCE MORE MAN'S IMPOTENCY IN HIS UNENDING FIGHT AGAINST THE MIGHTY ELEMENTS.

THE JUNE "WATERWAYS"

SUCH is the array and quality of the "leading articles" in the June issue of NATIONAL WATERWAYS that the magazine will be entitled to take rank among those older and greater publications in the English language.

The time has come when the Nation must face the problem of minimizing, if not preventing, the periodical flooding of great areas. Senator Francis G. Newlands, of Nevada, has proposed a system of public works construction which he believes will accomplish this purpose, but which will entail the expenditure of \$500,000,000. Col. C. MacD. Townsend, of the staff of engineer officers of the U. S. Army and president of the Mississippi River Commission, declares that the plan suggested by Senator Newlands would prove to be a fallacy. In the June WATERWAYS, both Senator Newlands and Colonel Townsend discuss from opposite angles this subject so vital to the welfare of the Nation.

Quite the first question before the people of the United States at this time is the pending reform of the tariff, to which the administration of President Wilson is pledged. It is a question that affects the economic status of every walk of the national life. If you would gauge the trend of this readjustment of a most delicate issue in the national existence, read the article by Edgar C. Snyder in NATIONAL WATERWAYS next month, in which he acquaints the public with the personal characteristics of the members of the present Congress who are now framing the tariff bill.

In the event of war between Great Britain and another foreign power, the Canadian Pacific Railway and the Grand Trunk Railway would be crippled during the winter months. The United States, of course, would observe strict neutrality and would be obliged to deny to the British the passage through American territory of—contraband of war! The Home Parliament and the Parliaments of Canada and Australia are working jointly for the establishment of what is known as the "Imperial All-Red Route," a railway and steamship highway designed to link the British territories traversed. The routing of passengers destined for Canadian and Australian ports through Northern Ireland to the new port of Blacksod, on the northwest coast, is expected to effect the economic rejuvenation of old Erin. The "All-Red Route" and the port terminals, and the lands through which it will extend, form the subject of an elaborately illustrated article by Harry Chapin Plummer.

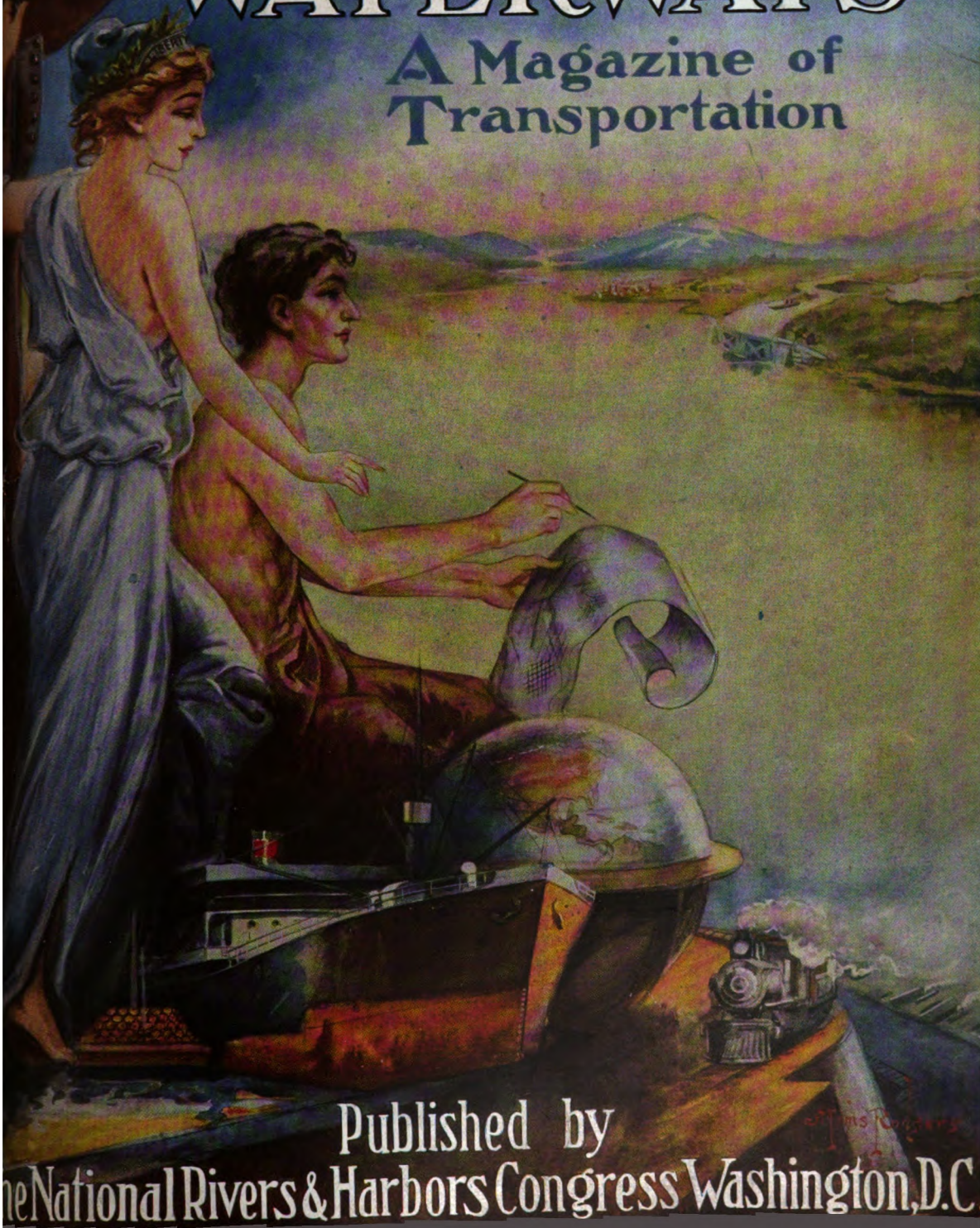
Among the harbor projects intended to advance this country's commercial position as the Panama Canal is opened to traffic is the building of Port St. Joe, on the upper Gulf coast of Florida. The interesting article by Leon Locke showing the development of the Intercoastal Canal, and the story, with new pictures, of the opening-up to traffic of the old Illinois and Michigan Canal, are other interesting features.

The Woman's National Rivers and Harbors Congress is represented by a report of the work of the organization in far-away Hawaii, illustrated by portraits of members and scenes from "The Pearl of the Pacific."

The rarest beauties of nature and the foulest deeds of man are brought to mind in passing through the Strait of Magellan, and a wealth of photos graphically descriptive of this wonderful contrast accompanies a finely-written account by Edward Albes, to appear in the coming issue, in which the series of beautifully illustrated travel studies upon "The Elusive Dutch Rhine" will be brought to its close by Mrs. Albrecht.

NATIONAL WATERWAYS

A Magazine of
Transportation



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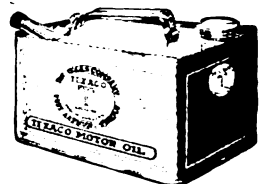
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VOL. I

No. 4

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*



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NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I

JUNE, 1913

NUMBER 4

THE PROBLEM OF FLOOD CONTROL

By COL. C. MCD. TOWNSEND

“WHEN His laws are violated, the Creator occasionally asserts His might and the works of man crumble before Him. If it would serve any useful purpose, I could name other cities where conditions are as dangerous as at Dayton or Columbus, but the lessons of the flood will be forgotten with the burial of its dead.” Colonel Townsend, president of the Mississippi River Commission, urges dependence for protection upon levees of ample strength rather than upon reservoirs or reforestation.

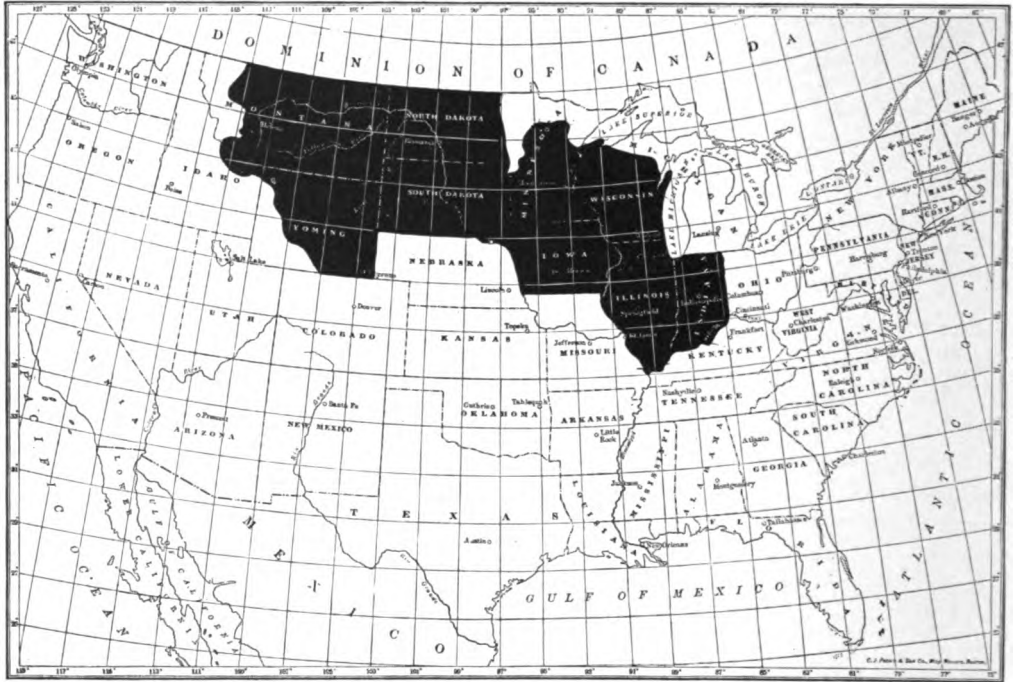
OF the many methods of flood prevention which have been suggested to the Mississippi River Commission consideration in this article will be confined to the three methods in which the public seems most interested, viz.: reforestation, reservoirs and levees. But before entering upon such a discussion it is desirable to have a clear conception of the sources from which floods arise.

The winds which come from the Atlantic Ocean deposit most of their moisture on the eastern slopes of the Alleghenies; the Rocky Mountains intercept the moisture from the Pacific; and, therefore, while showers occur from winds blowing over the Great Lakes, the original source of the floods of the Mississippi Valley is to be found in the Gulf of Mexico.

During the winter and spring the land of the Mississippi Valley is cooler than the waters of the Gulf, and the winds which

blow northward from that great body of water, saturated as they are with moisture, precipitate that moisture in the form of heavy rains or snows. As a rule the heaviest rainfall occurs near the coast and gradually decreases as the wind currents travel inland. Thus the average annual rainfall at New Orleans is 60 inches; at Memphis, 52; at Cincinnati, 42; at Pittsburgh, 36; and at St. Louis, 40 inches. At the headwaters of the Upper Mississippi it is but 25 inches, and at the headwaters of the Missouri but 13 inches.

From the foregoing it will be seen that the rainfall is very unequally distributed over the Mississippi Valley, being least at the upper sources of the tributaries, and rapidly increasing as you approach the main stream, though an exception is to be noted in the southern tributaries of the Ohio, whose sources are nearer the Gulf than are their outlets.



FOREST AREA REQUIRED, NOT TO CONTROL, BUT MERELY TO REDUCE, THE FLOODS

"TO REDUCE THE HEIGHT OF A FLOOD AT MEMPHIS BY REFORESTATION AT THE HEADWATERS OF THE RIVER FROM THAT OF 1912 TO THE NEXT HIGHEST ON RECORD WOULD REQUIRE A FOREST RESERVATION OF ABOUT 566,000 SQUARE MILES.*** EVEN SUCH A FOREST RESERVATION WOULD AFFORD ONLY PARTIAL PROTECTION, AND LARGE EXPENDITURES FOR LEVEES WOULD STILL BE REQUIRED"

The maximum discharge of the upper Mississippi River is estimated at 450,000 second-feet; the Missouri, 900,000; the Ohio, 1,400,000; the Arkansas, 450,000; and the Red, 220,000. There is also a large discharge from the Yazoo, St. Francis, White, Tensas, and Ouachita Rivers. The maximum discharge of the Mississippi during the flood of 1912 was about 2,000,000 second-feet at Cairo, and 2,300,000 at the mouth of Red River. It overflows its natural banks when the flow exceeds 1,000,000 second-feet.

While the influence of forests on stream flow has received little attention in this country until recently, the scientists of Europe have discussed the subject pro and con during the past forty years. It is generally accepted by both sides that the leaves falling from forest trees as they decay form a humus which has a large capacity to absorb water, and that when the forests are felled this humus is seriously injured by forest fires. It is also admitted that snow is more rapidly melted when it is exposed to the direct rays of the sun in an open field than when sheltered

from such action in a forest. The forest advocates claim that this is sufficient proof that forests absorb water during flood periods which percolates through the ground and flows from springs later in the season, thus reducing flood heights and increasing the low-water flow of rivers.

Its opponents do not admit that the problem is thus easily solved. They claim that floods do not arise from the melting of snows by the direct action of the sun; that this process is so slow that the water which flows off would not raise a river to mid-stage; that floods occur when on a layer of snow there falls a copious supply of rain, and both the rain and melted snow enter the stream simultaneously; and that, under such conditions, the forest instead of being beneficial is injurious. On cleared land the wind tends to blow the snow from the ridges and pile it in immense masses in the ravines, while in the forests the snow is uniformly distributed. A few days of sunshine dries out the ridges in the open field and melts sufficient snow in the forest to saturate with water the underlying humus.

If a heavy rainfall then occurs the forest humus, being saturated, can absorb no more water and the combined rain and snow of the forest flows into the streams, while in the cleared land the ridges, having dried out, absorb a large portion of the rainfall, and the snow-drifts expose a much smaller surface to the action of rain. Moreover, during periods of great drought, the forest humus and long deep tree roots absorb more water than grass and farm crops, and retard the run-off at a time when it is most needed for low-water navigation. They therefore maintain that a forest is a fair-weather friend, of some use in regulating the mid-stages of a river, but an utter failure when most needed; that is, during extreme floods or extreme low water.

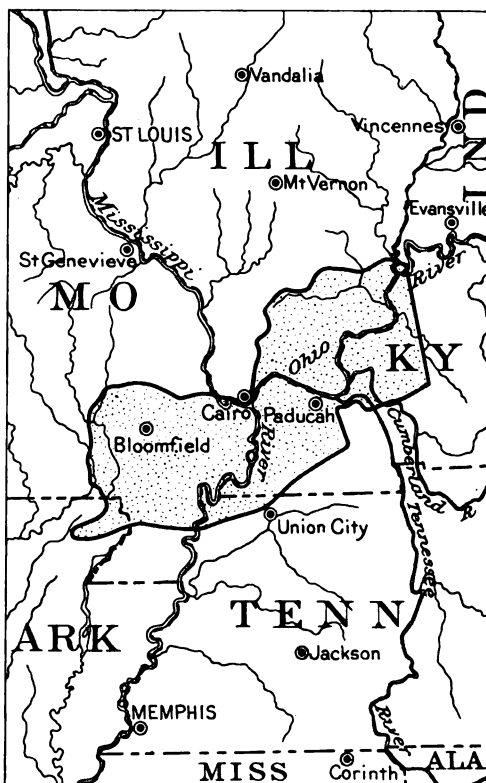
It requires from twenty to fifty years to produce a good forest growth, and over a century for the leaves of that forest to decay in sufficient quantities to produce the humus which will be satisfactory as an absorbent of rainfall. We cannot afford to delay the protection of the Mississippi Valley, even to produce the forest growth, without taking into consideration the time required for the humus to form. We are more vitally interested in the height that the river will attain this year and in the next few years than in what will occur in the year 2013.

It is pertinent to this discussion to determine what would be the extent of the reservation which would be required to reduce the flood heights on the Mississippi River a given amount. The Mississippi flood of 1912 attained the greatest height of any then recorded, at all gauge stations except at Vicksburg. That of January and February, 1913, while five feet lower at Cairo, was the next highest flood at Memphis, and for a considerable distance along the river. We will endeavor by reforestation to reduce the flood of 1912 to the height attained in the winter of 1913. For this purpose it will be necessary to reduce the maximum discharge of the river 500,000 second-feet. Assuming, for the sake of argument, that reforestation could be made to reduce the flood discharge of a stream by one-half, what would be the size of the forest reservation which would be required to reduce the flood heights on the Mississippi by 500,000 second-feet?

It will be necessary, of course, to dis-

tribute the reduction among the tributaries. The flood discharge of the Missouri River at its headwaters is about one cubic foot per second per square mile of drainage area, and if the reduction in discharge of one-half is to be secured by reforestation, two square miles of forests would be necessary for every second-foot of reduction of flood discharge, or 400,000 square miles of forests to reduce the discharge of the Missouri River 200,000 second-feet. At the headwaters of the Upper Mississippi, the ratio of flood discharge to drainage area is about two second-feet per square mile. A reduction of this discharge by one-half would require a forest reservation of 100,000 square miles to reduce the floods of the Upper Mississippi 100,000 second-feet. On the Ohio River the ratio is six to one, and it would therefore require forests at the headwaters of the Ohio having an area of 66,000 square miles to reduce its flow 200,000 second-feet.

In other words, to reduce the height of



TO HAVE RETAINED THE MISSISSIPPI FLOOD OF 1912 WITHIN ITS BANKS WOULD HAVE REQUIRED A RESERVOIR IN THE VICINITY OF CAIRO, ILLINOIS, HAVING AN AREA OF 7,000 SQUARE MILES. (ABOUT THAT OF THE STATE OF NEW JERSEY) AND 15 FEET DEEP

a flood at Memphis by reforestation at the headwaters of the river from that of 1912 to the next highest on record would require a forest reservation of about 566,000 square miles, an area exceeding that of the portions of Montana and Wyoming drained by the Missouri River and the States of North and South Dakota, the portion of Minnesota drained by the upper Mississippi River, and the States of Iowa, Wisconsin, Illinois and Indiana. But even such a forest reservation would afford only partial protection, and large expenditures

profitably be converted into forest reservations is too limited in area to produce an appreciable effect on the floods.

To have retained the Mississippi flood of 1912 within its banks would have required a reservoir in the vicinity of Cairo, Illinois, having an area of 7,000 square miles, slightly less than that of the State of New Jersey, and a depth of about 15 feet, assuming that it would be empty when the river attained a bank-full stage. If the site of such a reservoir had a level surface the quantity of material to be



DRAINAGE BASIN OF THE MISSISSIPPI RIVER

DRAINING AN AREA OF 1,250,000 SQUARE MILES, THE MISSISSIPPI CARRIES DOWN TO THE GULF OF MEXICO WATERS GATHERED FROM THIRTY-ONE OF THE STATES OF THE UNION AND PART OF THE DOMINION OF CANADA. BELOW CAPE GIRARDEAU THERE ARE 30,000 SQUARE MILES OF FERTILE BOTTOM LANDS WHICH ARE SUBJECT TO OVERFLOW, EXCEPT WHEN PROTECTED BY LEVEES

for levees would still be required. Under the above assumptions, to prevent any overflow by reforestation would necessitate a practical abandonment of the valley for agricultural purposes, and the development of an extensive irrigation system to produce tree growth in the arid regions of the West.

It is therefore apparent that even under the most extravagant claims of forestry advocates, reforestation as a means of reducing flood heights on the Mississippi River requires the conversion of too much farming land into a wilderness to be practicable, and the waste land that can

excavated in its construction would be over 100,000,000,000 cubic yards, and its estimated cost from fifty to one hundred thousand million dollars. Such a volume of earth would build a levee line 7,000 miles long and over 150 feet high.

Cairo is the logical location for a reservoir to regulate the discharge of the Lower Mississippi. It will not only control the floods from the Ohio but also the discharge from the Missouri and Upper Mississippi. But if the reservoirs be transferred from the mouths of the tributaries to their headwaters their capacity must be largely increased. No two floods have the same

origin, unless they are referred back to the Gulf of Mexico. The wind bloweth where it listeth. If the prevailing winds in the early spring are from the southwest, the southern tributaries of the Ohio furnish the crest of the year's flood; if more nearly from the south, reservoirs will be required on the streams of Ohio, Indiana and Illinois; a slight varying of the wind will produce a flood in the Upper Mississippi, while if it blows from the southeast the principal sources of trouble will be the Red, Arkansas and Missouri Rivers. To control the flow of every stream in the Mississippi Valley by reservoirs is a pretty large job, even for the United States Government, but that is what the control of the Mississippi during floods by reservoirs signifies.

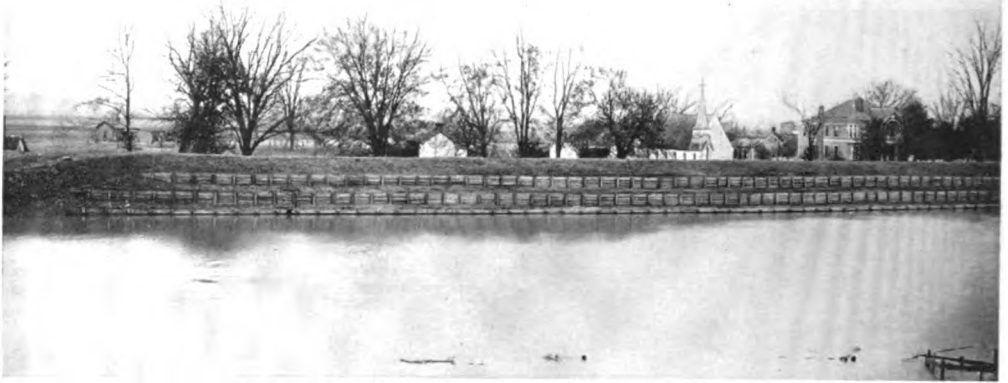
The advocates of the control of the floods of the Mississippi by reservoirs do not, however, have in mind any such radical control as is above indicated. They limit the control to the headwaters of the various tributaries, and, while every stream that flows in the valley may be considered a headwater of some tributary, I judge from the discussions of the reservoirs and their proposed employment for power purposes, which requires a considerable height of dam, that by headwater is meant the sources of the rivers in mountainous countries as distinguished from the more level plains, and more specifically the sources of the Missouri above the mouth of the Yellowstone, those of the Upper Mississippi in the State of Minnesota, and those of the Ohio in the Appalachian Range.

The flood which recently devastated the country affords data for determining the effect of such a system of reservoirs, and its lessons are the more valuable because no effort is necessary to refresh the memory. A flood wave will traverse the 966 miles from Pittsburgh to Cairo in about 11 days; the 858 miles between St. Paul and Cairo in about 10 days; and the distance from St. Joseph, Mo., to Cairo, in about 8 days. When on April 2 the gauge at Cairo attained a height of 54 feet there were flowing down the Mississippi River at least 2,000,000 cubic feet of water a second. The readings of the gauges at Pittsburgh on March 22, at St. Paul on March 23 and at St. Joseph on March 25 show that if a system of reservoirs had

been constructed which would have prevented all flow from the the Allegheny, Monongahela, the Mississippi above St. Paul, and the Missouri above St. Joseph, it would have reduced the 2,000,000 second-feet discharged by the Mississippi River at Cairo on April 2 less than 35,000 second-feet. The proposed system of reservoirs would have cost hundreds of millions of dollars and its effect on this year's flood height of the Lower Mississippi could not possibly have exceeded six inches.

Neither the rain nor snow which falls upon the mountainous portions of the Mississippi watershed has much effect upon the floods of the lower river; the principal source of the floods is the great alluvial plain between the mountains. Neither do great floods arise from average conditions, but from exceptional variations such as are caused by a series of heavy rains rapidly succeeding one another. Each rainstorm starts down a stream a flood the volume of which can be absorbed by a reservoir with comparatively little trouble, but if a second storm sweeps over the valley, the reservoir to be effective must be emptied or its capacity doubled. To hold all the excess rainfall till low water would require reservoirs of enormous capacity. Economic considerations usually require that the reservoirs should be emptied as soon as the crest passes, in order to utilize the same space for a second rainfall; so that while they reduce the crest of a flood at a given locality, they necessarily prolong the period during which the river remains at a high stage.

The water which is abstracted from the Gulf of Mexico is usually precipitated in the Mississippi Valley within a period of two days; the return flow extends over a period of two or three months. The sum of the maximum discharges of the various tributaries of the Mississippi River is nearly 4,000,000 second-feet, while the greatest measured discharge of the river itself is about 2,300,000. This apparent discrepancy arises from the fact that the floods of the tributaries do not reach the Gulf at the same time. The crest of the Ohio River flood usually passes down the river in March or April, that of the Missouri in May or June. Moreover, the same law applies to the tributaries of a tributary. The waters of the southern



WOOD REVETMENT TO PROTECT FROM DAMAGE BY WAVES

IN THE FLOOD OF 1912 ONLY 13 MILES OF LEVEES FAILED WHILE 1525 MILES STOOD FAST. NO LEVEE FAILED THAT WAS BUILT TO A SUITABLE GRADE AND OF ADEQUATE DIMENSIONS

branches of the Ohio tend to discharge into that river before those in Ohio, Indiana and Illinois.

By the construction of reservoirs this beneficent law of nature is deranged. Instead of the crest of the flood of one stream passing down the river before that of another reaches it, two prolonged high stages will occur at nearly the same time and the resultant combination may be higher than either flood would have been by itself.

A system of flood control designed to be satisfactory for one city may be most disastrous to another locality farther downstream. If a system of reservoirs had been in operation in the Allegheny and Monongahela Rivers during last January, it would have protected Pittsburgh from overflow and diminished the flood at Cincinnati when it was fifty feet on the gauge, but only to increase it when it attained a height of sixty feet. And this effect would have been propagated to the Gulf.

Pittsburgh, moreover, would never consent to such a manipulation of reservoirs on the upper tributaries of the Ohio as would insure the reduction of floods at Cincinnati or on the Lower Mississippi. It is inevitable, therefore, that source stream control on the Mississippi River and its tributaries would soon reduce it-

self to the question of whose ox is to be gored.

While the use of forests or reservoirs as a means of flood control is still in an experimental stage all over the world, the employment of levees for this purpose has been tested for centuries. The Po, Rhine, Danube, Rhone, and other rivers of Europe have been successfully leveed.

There is an element of uncertainty in all the forces of nature. It is possible that there will be earthquakes and tornadoes in the future more violent than those of the past. It is possible also that there will be some combination of meteorological conditions which will create a flood of greater volume than has heretofore occurred in any given drainage area. But the laws governing the flow of water in a confined stream have been carefully studied and the height to which levees should be constructed is as susceptible of determination as the strains to be permitted in an office building due to wind pressure or the moving load allowable on a bridge. The city engineer solves a similar problem whenever he constructs a sewer to carry off the storm water from the city streets.

Nor is there any evidence that floods have been increasing in recent years due to the cutting off of forests or that the

beds of our main rivers are rising as they are leveed. The effect of forests on rainfall in Europe have been carefully investigated by Professors Schlichting and Hagen. The records at London, Paris, St. Petersburg, and other localities where the rain has been recorded for long periods, fail to show any tendency to an increased fall in recent years. The meteorological records of the United States have not been maintained a sufficient length of time to be of much value in solving the problem.

Such data as we possess indicate that the flood discharge has not increased in recent years. The greatest flood of the Mississippi at St. Louis occurred in 1844, the next largest in 1785. On the Great Lakes the high water of 1838 is the greatest on record. In the Ohio the flood of 1884 exceeded that of 1913 at Cincinnati, and that of 1832, while five feet lower at Cincinnati, was five feet higher at Pittsburgh than this year's flood. The gauge records at the bridges over the Upper

Mississippi, which cover a period of thirty years, would indicate that the flow from Minnesota and Wisconsin, where the forests have been most extensively destroyed during the period, has been slightly improved, though the river shows signs of deterioration where it receives the flow from the prairie lands of Iowa and Illinois.

On the Merrimac River, where the mill owners have accurate observations extending to 1849, there appears to be some increase in flood discharge, though reports of the Forestry Commission of the State of New Hampshire and census returns from the State of Massachusetts indicate that the forest area of its basin is 25 per cent. greater than 40 years ago, due to the abandonment of farms. Such records as we have in this country appear to confirm the conclusions of the German forestry authorities that the influence of forests on drainage is concealed by other causes more powerful in their effects.



Fankent, Cairo, Illinois

THE OHIO RIVER IN FLOOD, CAIRO, ILLINOIS, 1913

THE LEVEES HELD THE WATER OUT OF THE CITY DURING THE FLOODS OF BOTH 1912 AND 1913, BUT FOR SOME DAYS THE HIGH WATER CUT OFF ALL COMMUNICATION EXCEPT BY BOAT

There is not the remotest connection between deforestation and the disasters which have just occurred at numerous cities in Ohio and Indiana. The flood of 1832 was similar to that of 1913, but it was discharged by streams of the dimensions the Creator intended they should have. Since then cities have sprung up and land has become so valuable that riparian owners have encroached upon the waterways. Where the floods formerly flowed untrammelled, factories and dwellings have been constructed, and numerous bridges have further restrained the discharge of streams. When His laws are violated, though slow to anger, the Creator occasionally asserts His might and the works of man crumble before Him. If it would accomplish any useful purpose, I could name other cities where conditions are as dangerous as at Dayton or Columbus, but the lessons of the flood will be forgotten with the burial of its dead.

The question of the rise of the river bed by levee construction has been exhaustively investigated. On the Rhine the maximum effects were observed at Dusseldorf, where the same discharge at low water appears to attain a height eight inches greater to-day than it did one hundred years ago, while the same discharge at high water has lowered about one foot in a century. The observations of the Mississippi River Commission agree with the Dusseldorf observations, in that the Mississippi River appears to be slightly enlarging its section, at least at mid-stages.

The present contents of the adopted levee line of the Mississippi River are about 243,000,000 cubic yards. It has been computed that, with an addition of 200,000,000 cubic yards and at an estimated cost of \$57,000,000, this line would be safe against any flood which has occurred in the Mississippi River. This sum, though large, is less than \$4.00 per acre of land protected from overflow, and appears insignificant when compared with the amounts which are being expended per acre for irrigation purposes in the arid West. The increase in the value of land or the damage caused by one overflow like that of 1912 would pay for the completion of the levee system.

When a levee line contains but one-half the material that safety requires, crevasses afford no argument against levee construc-

tion. During the flood of 1912 hundreds of miles of levees were topped with earth in sacks to a height of from two to four feet to prevent the water flowing over them, and water was seeping through their narrow bases in copious streams, which were unheeded until mud began to flow. The levee which failed at Beulah, Miss., this winter was held till the pile of sacks exceeded twenty feet in height.

The holding of 1525 miles of such levees through the flood of 1912, even though 13 miles failed, is a powerful argument in favor of a properly constructed levee line. There was no failure where levees were built to a suitable grade and adequate dimensions, as in the Upper Yazoo district.

While of the opinion that levees afford the only practicable method of controlling the floods of the Mississippi River, I desire to state that I am strongly in favor of both reforestation and reservoir construction, but limited to the purposes for which they are adapted, just as I am in favor of reinforced concrete for small bridges, though not considering it applicable to one spanning the lower Mississippi River. The price of lumber to-day is a sufficient argument for planting trees, without attempting to associate forestry with the climate or with the flood conditions on our rivers. If the Federal Government or the States do not conserve the forests, the time will soon come when the farmer will raise his crop of timber just as he now plants a field of wheat, and for the same reason, because it will pay him to use his waste land for the purpose.

Reservoirs are necessary for municipal water supplies, for purposes of irrigation, for the development of power, and for feeders to canals. They can be successfully employed on small streams to diminish floods or increase the low-water flow. The trouble arises when an attempt is made to utilize them for too many purposes at the same time. There must be a paramount issue to which the others will be subsidiary.

If the main purpose is to supply a city with water, only the excess can be used for power development. If the dams are constructed to produce power, the reduction of floods and the improvement of river navigation must be subordinate thereto. Water required for irrigation can only be

used to develop power when the dam of the storage reservoir is given a greater height than is necessary for its flow over the land to be reclaimed.

During the next decade there will be an enormous development of reservoirs both for irrigation and for power purposes, which I hope will be utilized to correct man's folly and prevent many disasters similar to those which have recently occurred in Indiana and Ohio. While the control of the Lower Mississippi by

I am also skeptical of government ownership. It may have worked satisfactorily in irrigation projects, but my own experience with government ownership of water-power makes me suspicious. I have found that when the Government buys water-power, the power companies consider it worth \$25.00 per horsepower per year, but when conditions are reversed and an attempt is made to lease it, the price drops to ten cents. Wherever it will pay to build a dam for power purposes, capital stands



CROMWELL WHARF, FOOT OF TOULOUSE STREET, NEW ORLEANS

HERE IS A LEVEE THAT STAYED ON THE JOB, ALTHOUGH IT HAD TO BE TOPPED WITH SAND BAGS. NOTE THE OCEAN VESSELS FLOATING CONSIDERABLY ABOVE THE LEVEL OF THE ADJACENT STREET

reservoirs is impracticable, there are numerous smaller streams where they can be used with excellent results.

It is questionable, however, whether such reservoirs should be built with the control of our rivers as the first object of consideration. It will, to be sure, saddle the cost on the United States Treasury, but to close down a power plant and stop the growth of crops every time the navigation of a minor stream is interfered with, I do not consider would be a wise proceeding.

ready to construct it, if it can obtain the franchise. By regulating the franchise the reservoir can also be used to restrain local floods.

The systematic conservation and regulation by the Federal Government of a river from its source to its mouth sounds most attractive, suggesting a scientific solution of every problem of river hydraulics, but instead I greatly fear that it is the voice of a siren luring the people to an open pork barrel for every stream in the United States.

HOW FLOODS MAY BE PREVENTED

By FRANCIS G. NEWLANDS, U. S. S.

THE adoption of all practicable means to reduce the crest of floods below the danger line; the treatment of every stream as a unit from its source to its mouth and its development for all the purposes it can serve; the formation of a "River Regulation Board" which shall have entire control of all the rivers of the United States and receive \$50,000,000 a year for its work, is advocated by the Senator from Nevada, who was a member of the Inland Waterways Commission.

PRIOR to the recent disastrous floods, the popular interest in the problems of river regulation and flood prevention was somewhat academic, but it has now been greatly stimulated. Before, it was felt that something ought to be done and perhaps would be done, in time; to-day the prevailing feeling is that something must be done, and done at once. As a long-time advocate of a liberal policy of internal development, I am glad to note this change from the stage of dreams and speculation to the stage of action. We cannot but mourn over the loss and suffering; but the long struggle to secure action was growing so disheartening that we can regard as at least partially compensatory the consequent popular demand for effective river regulation.

If the problems to be solved were engineering problems only, I would hesitate to express an opinion; but they are also legislative problems, in the solution of which Congress must bear its share of responsibility. It is important that Congress shall not order work done which is scientifically unsound and which will not accomplish the ends sought. But it is equally important that the engineers shall not waste their time making plans which Congress is unwilling to carry out; and hence, an accommodation of views is necessary in order to secure sound plans and wise legislation, and to that end I am glad to contribute what I can.

From a legislator's point of view, it is vital to keep within the national powers over the subject-matter. The power of



Harris & Ewing

Congress to do anything whatever in aid of river regulation and flood mitigation rests upon its control over interstate commerce. Bank revetment and levee building are generally recognized as promoting interstate transportation by facilitating navigation. The protection of lands along the rivers from overflow is not in itself within the national power, unless the lands belong to the Nation; but since the levee building by which they are incidentally protected does directly control the river channel as an instrumentality of interstate commerce, it can properly be done.

In any extension of our work the promotion of interstate commerce, either directly or incidentally, is a necessary element. For this reason it is important to determine whether forestry, the storage of flood waters in reservoirs, and other similar measures which are proposed, do directly or incidentally promote navigation. If they do not, these proposals are not merely scientifically unsound but also legislatively impossible. Flood mitigation itself, like swamp land protection, is not within the power of Congress unless it promotes navigation. The contention, therefore, that forestry, headwater storage of flood waters, and other similar measures do not exert an important influence on river flow is a two-edged sword, the effective use of which may result in destroying our ability to do anything whatever for the mitigation of floods.

The essential thing in river regulation and flood mitigation is the control of run-

off; first, to obstruct the water which falls upon the ground and slow up the speed with which it runs into the streams; and, second, to facilitate its flow after it is in the streams, by the removal of obstructions. For the latter purpose, various effective means are now in use: Levee building, bank revetment, straightening and deepening of channels, removal of sand bars, etc. To these should be added the removal of railroad embankments and other obstructions which have been carelessly allowed to be constructed across river bottoms and to encroach upon the streams. These obstructions, which ought never to have been allowed, added seriously to the destructiveness of the recent floods.

The means of retarding the run-off of the rainfall into the streams are not so well settled. It needs no argument to show that floods can be lessened to the extent to which this can be done. Run-off begins when more rain falls than can be absorbed by the ground; and its character and effect depend upon such elements as the rate of the downpour, the slope and condition of the ground, and the presence of surface obstructions. Natural obstacles to run-off consist chiefly of vegetable growth, such as crops, both wild

and cultivated grasses, forests, etc. Artificial ones may be grouped under the head of forests planted for that and other purposes, dams to impound the water in reservoirs or settling basins, irrigation and methods of cultivation intended to increase the absorption of water in the soil.

There is no question about the power of the Nation to adopt means to slow up too rapid run-off, provided it modifies the alternations between the stages of high and low water in the streams, thus promoting navigation by producing greater stability of flow. The vital point is to be sure that the means adopted do have this effect; and it is upon this point that a difference of opinion exists.

The arguments against the beneficial effects of forestry upon stream flow are very plausible. One writer says that all soils have only a fixed capacity for the absorption of moisture, and after that limit is reached the rainfall will run off, whether the ground is bare or is covered with trees. To this it may be replied that few soils absorb moisture to their full capacity, without some compelling circumstances, such as the leaves, twigs, and bushes in forests. If the forest is old and the accumulation of leaf mold deep, that also



RUINS OF FOU-PING, CHIH-LI PROVINCE, CHINA

MANY STRIKING EXAMPLES OF THE RESULTS WHICH FOLLOW THE DESTRUCTION OF FORESTS IN MOUNTAINOUS COUNTRIES ARE TO BE FOUND IN CHINA. THE REGION HERE ILLUSTRATED, WHICH IS IN THE PROVINCE IN WHICH PEKING IS LOCATED, WAS ORIGINALLY HEAVILY WOODED. IT HAS BEEN SETTLED, CLEARED, RUINED AND ABANDONED SINCE 1725

forms a considerable reservoir. It is also undoubtedly true that forested soils have a much greater capacity for absorbing moisture, from the fact that the trees drink the water and use it in their growth, particularly in the spring when they are forming leaves. I have no doubt that a careful scientific study of the subject would show that forest-covered soils have capacity to absorb, and that they do actually absorb, much more rainfall than similar soils when bare.

It is also objected that forestry, while good and desirable in itself, is impracticable as a means of river regulation because of the large areas that would have to be planted to produce an appreciable effect. Speaking for myself, I have never supposed that the problem of river regulation could be solved by forestry alone, or by any other one means. I feel sure that it will be necessary to adopt and carry out every practicable means of ob-

The land has been cleared to make homes for men, and we can take no backward step there. But the forests yet standing can be preserved, so far as possible, and west of the Mississippi there are vast areas where new forests can be planted.

It is impossible, of course, to do more than theorize regarding the exact nature of the influence of forests upon stream flow; but that it is great and favorable, and that it is to our interest to promote forestry as one of the means of stream control, I have no doubt.

Regarding the holding back of run-off by means of dams on the headwaters of the streams, there seems to be much misapprehension. It appears to be easy, by calculating the size of the reservoir required to contain, at one time, the entire flow of the Mississippi River or its tributaries, to make the project look ridiculous. The most that has ever been suggested, so far as I know, is that by this and other



ARTIFICIAL TERRACING, WU-T'AI-SHAN, SHAN-SI PROVINCE, CHINA

"BY USING A METHOD OF PLOWING THE GROUND IN ALTERNATING RIDGES AND DEPRESSIONS, MAKING THESE RIDGES AND DEPRESSIONS LEVEL, FOLLOWING THE CONTOUR OF THE HILLS, AS MUCH MOISTURE WOULD BE RETAINED ON THE HILLTOPS AND SLOPES AS ON THE BOTTOM LANDS, THEIR PRODUCTIVENESS WOULD BE VASTLY INCREASED, AND EROSION WOULD BE PREVENTED."

structing run-off; and that, even then, our ideal must be, not to prevent overflow entirely, but to reduce the crest of the floods below the danger line, meanwhile continuing our bank revetment and levee building. True, it is not possible very greatly to increase the area of our forests in the region east of the Mississippi River.

means enough of the run-off can be held in check to reduce the crest of the floods below the danger line. Recalling the fact that great reservoirs at the head of the Volga and other Russian rivers, with a storage capacity of about 35,000,000,000 cubic feet of water, are now in successful operation, and not only improve naviga-

tion but also greatly reduce the floods; that the waters of the Croton and Nashua Rivers in this country are virtually all taken up by storage dams; that in the West the entire flow of many rivers of considerable size has been utilized for irrigation; that six reservoirs now in use on the headwaters of the Mississippi River, out of a total of forty-one proposed to be built, are successfully increasing the mean minimum flow as far as St. Paul; considering that the United States Geological Survey confirms the belief that these means are practicable, and that a very competent body of engineers has declared it can be done on the Allegheny and Monongahela Rivers for the safeguarding of Pittsburgh; I am inclined to distrust the conclusions of those who oppose the building of dams for the creation of reservoirs on headwaters.

It has been objected that reservoirs are merely an additional source of danger, because they sometimes break and add to the volume of the floods. What is a levee, anyway, but a dam? Do not levees sometimes break and destroy lives and property? I have never heard this urged as a reason for not building levees. It is odd that we should be asked to believe that, because a dam which breaks adds to the danger, therefore a dam which does not break is not a source of safety. The dams which it is proposed to build are the kind that do not break.

Where there is a scarcity of dam sites, it has been suggested that a large number of shallow settling basins can be constructed in the small valleys which are found almost everywhere. These would hold back a part of the flood waters until the rain was past, and then it could be let off, leaving behind the sediment precipitated. This would not prevent cultivation, but would promote it by the fertilization of the soil. The lands would not have to be purchased and the dams would cost little. I hope that this plan will be considered by the President's commission now studying the flood situation.

It appears that the average annual rainfall in the Mississippi Valley is greatest near the Gulf and diminishes with the distance of the streams from that source of supply. The range as given by one authority is 60 inches at New Orleans, 52 at Memphis, 42 at Cincinnati, 40 at St.



THAT THE JAPANESE ARE NOT AFRAID TO ATTACK A HARD PROBLEM IS SHOWN BY THIS ILLUSTRATION OF THE TERRACING AND TURFING CARRIED OUT IN HIROSHIMA, JAPAN, AS THE FIRST STEPS TOWARD REFORESTING A STEEP AND BADLY ERODED MOUNTAIN SIDE

Louis, 36 at Pittsburgh, 25 at the headwaters of the Mississippi, and 13 at the headwaters of the Missouri. The discharge of the tributaries bears a direct relation to these figures; and these facts have been made the basis of the assertion that some of the worst floods on the lower Ohio and Mississippi Rivers are chiefly due to rainfall, not upon the headwaters, but upon the lower tributaries of those rivers.

It may be admitted that some of the floods upon the lower Ohio and Mississippi have a local origin. I am inclined to believe, as one excellent authority has stated, that no two Mississippi River floods have exactly the same origin. But my interpretation of these facts would be that they show, what I have always contended, that all parts of the river need protection, and that it must be treated as a unit before its treatment will be effective. What has the location of the flood to do with the right of the people who suffer from it to demand protection? Floods occur on all parts of the streams; and the people of Pittsburgh, of Columbus, of Hamilton,

and of the other cities recently stricken have a right to complain of the policy which has concentrated our work upon the Lower Mississippi and left them a prey to neglect. I am heartily in favor of building levees, but I am opposed to a policy of discrimination.

The holding back of run-off by increasing the absorption of water in the soil is probably the most important of the means of obstruction which is proposed; and it has the great advantage that it is equally applicable to all parts of the country, that it can be done inexpensively, and that it will bring with it many other benefits, chiefly in the way of crop production, in the prevention of soil erosion and of the formation of sand bars by which navigation is impeded.

The influence on run-off of cultivation as now generally practised is to promote rather than retard it. Farmers drain their damp lands and plow their fields straight up hill and down, so that the flow of rainfall is facilitated and the soil carried off into the streams.

Another result is that, on account of this rapid run-off, absorption is prevented, not enough moisture is stored in the soil, and there are crop failures from drought even in regions where the average annual rainfall is ample. If, on the other hand, the farm lands were made to absorb all the water that falls upon them, up to the limit of their capacity, an enormous quantity of water would be stored in the soil and a powerful influence exerted upon flood and stream flow.

This can easily be done. All that is necessary is a method of plowing the ground in alternating ridges and depressions, making these ridges and depressions level, following the contour of the hills. If this were done, as much moisture would be retained on the hilltops and slopes as on the bottom lands, and their productiveness would be vastly increased. One authority claims that the production of crops, under this method, is doubled upon an average, and that a crop of trees can be matured in about one-third the usual time. This is scientific agriculture of the best kind. It is being practised by a few, here and there, but there is great need for the spread of knowledge regarding it and for the scientific regulation of the whole subject of soil absorption. The cotton

planters of the South are deriving much benefit from a similar method of plowing, suggested by the late Dr. W J McGee.

In the semi-arid West a system of agriculture is practised, called "dry farming," which bears a close resemblance to this. It consists of catching and holding in the soil all the rain that falls, so far as possible, by making a blanket of dry powdered soil on top of the ground and a packed storage reservoir beneath it; and it has added greatly to the productiveness of that region. It is really a form of irrigation, since the only difference between it and the usual form of irrigation is in the means adopted to store the water.

Secretary Lane recently made the interesting suggestion that it might become necessary to practise irrigation in the humid regions. I think the suggestion an excellent one, and scientific storage of moisture in the soil is the way to begin. This method is applicable to timber and pasture lands no less than to cultivated fields. The terraces once made on such lands need never be renewed, and the production of grass and timber would be surprisingly stimulated.

Perhaps the best feature of this proposal is that it involves no raid upon the treasury. All that is required is an appropriate organization, in connection with the machinery for river regulation by other methods, for teaching and demonstrating this method of cultivation to the farmers. They could afford to do all the work for themselves; indeed, they could not afford not to, since it is wholly for their benefit.

There is not space to speak of other means of river regulation and flood control, not even of irrigation. The people living on the headwaters of the Missouri River are aroused on the subject of development in the combined interest of irrigation and river regulation and are demanding action. They have many thousand acres, belonging to the public domain, the present development of which for irrigation alone is too expensive to be commercially profitable, but which would become feasible if combined with the other uses of water. And surely we have before us no more important work than the making of homes for men. Neither is there space to speak of the Intermountain and Pacific Coast regions, which have their rivers crying for improvement, and

where irrigation is the very heart-blood of civilization. I fear we too often treat this whole question as though it were a problem of the Mississippi Valley only; not selfishly, but because its problem is nearer and more insistent. Everything that has been said about the right of the people on the Mississippi and its tributaries to be protected applies with equal force wherever there are navigable rivers requiring improvement.

In the comprehensive treatment of this subject, there should be team work upon the part of all the scientific services of the country that relate to water, so that their

should have the power of initiative. At present, the initiative is entirely upon the part of Congress and with reference simply to individual projects. Under a perfected system the initiative should be in a national board of river regulation, which would view the country as a whole and treat every river, with its tributaries, as a unit. Such a board should not be denied the power of suggestion to Congress. Every river and harbor bill has practically denied the Engineer Corps the right to exercise initiative or to make suggestions, and confined it practically to a plain answer of yes or no to specific



HOW TORRENTS ARE TAMED IN FRANCE

MANY MOUNTAIN STREAMS IN FRANCE, LIKE THE ONE HERE SHOWN, WHICH FORMERLY RAN WILD, CUTTING GREAT GULLIES IN THE MOUNTAIN SIDE, CARRYING GREAT QUANTITIES OF DEBRIS ONTO ARABLE LANDS AND CLOGGING NAVIGABLE RIVERS WITH SAND AND GRAVEL, HAVE BEEN COMPLETELY SUBDUED BY THE BUILDING OF A SERIES OF SOLID MASONRY DAMS

plans and their works may dovetail together for a common purpose. Congress has heretofore studiously avoided this in its legislation, largely because of the opposition of the Engineer Corps of the Army, which wishes to maintain an absolute isolation. We are willing to concede the leading position in the united forces to the Engineer Corps, but we object to a system which isolates each service from the others and absolutely prevents the coordination of plans and effort.

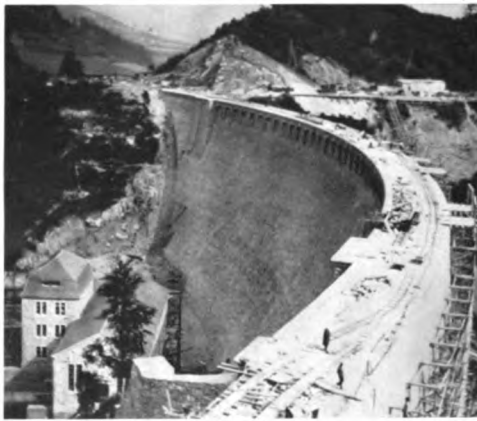
Whatever body controls this work

proposals for examination and survey.

Complete river regulation will fail unless all the compensatory uses and control of water can be secured, and such compensatory uses and control be made to contribute to the general cost. These compensatory uses, therefore, must not be surrendered entirely to private enterprise, unless under legislation that will compel contribution to the general cost.

No one has a higher opinion of the Engineer Corps of the Army than I have. I would enlarge and strengthen, rather

than diminish or weaken, it. Congress is to be criticised for confining it in a strait-jacket, so far as suggestion and recommendation are concerned. But the Engineer Corps of the Army has its weaknesses, as all other organizations have. One weakness has been that it has often resisted desirable innovations. The persistency with which it fought Captain Eads' proposal for the jetty system will be remembered. The tenacity with which it has opposed the suggestion of cooperation with the other scientific services in this work deserves criticism. At the same time, it is to be commended for its recent work regarding the investigation of and report upon the irrigation projects.



Courtesy Pittsburgh Flood Commission

UPPER—THE LARGEST DAM IN EUROPE, ON THE BOBER RIVER, NEAR MAUER, GERMANY; 263 FEET HIGH, 918 FEET LONG, 105 FEET THICK AT BOTTOM AND 23 6 FEET ON TOP. SEE ALSO PAGE 373

LOWER—ONE OF SIX DAMS FOR FLOOD CONTROL ON A TRIBUTARY OF THE ODER, NEAR REICHENBERG, AUSTRIA; BUILT BY COOPERATION OF STATE, PROVINCIAL, COUNTY AND CITY GOVERNMENTS IN PRUSSIA, BOHEMIA AND SAXONY

It exhibited a just and liberal sentiment worthy of the highest commendation. This very work of irrigation was one of coordination and illustrates the general nature of the coordinating work upon which I have been so insistent. The Engineer Corps will, of course, stand at the head of this great work of river regulation; but it should drop its attitude of exclusiveness and isolation and enter with a generous spirit into coordination with the other scientific agencies of the government in the solution of these great questions.

We have various scientific services at work on the problems relating to water, but they are scattered in different departments. In the Agricultural Department we have the Forest Service, the Weather Bureau, the Bureau of Soils, the Bureau of Plant Industry, and the Drainage Division; in the Department of the Interior we have the Reclamation Service and the Geological Survey; in the Department of Commerce we have the Coast and Geodetic Survey, and in the War Department we have the Engineer Corps of the Army, to which thus far has been entrusted the improvement of our rivers. In addition to this we have a Mississippi River Commission, composed partly of civilians and partly of army engineers, whose jurisdiction extends as far as Cairo. Then we have a National Forest Reservation Commission, engaged in the purchase of lands in the White and Appalachian Mountains, composed of the Secretaries of War, Agriculture, and Interior, and also of two Senators and two Representatives. All these various organizations whose problems relate to water are operating in an entirely detached way and without cooperation with each other, each jealous of its jurisdiction and resenting any intrusion by the other. It is obvious that no private enterprise would be so conducted. It is clear that they ought to be operated in some coordinating and co-operating organization. A Board of Public Works is suggested, but this would simply add an additional organization to those already existing.

For years I have urged that these various services should be brought into coordination through a River Regulation Board, consisting of their chiefs, of which board the Chief of the Engineers of the



Courtesy Engineering News

BEND OF THE BOBER RIVER, BELOW THE MAUER DAM

THE BOBER RIVER DAM WAS BUILT BY THE GOVERNMENT OF PRUSSIA AND THE PROVINCE OF SILESIA FOR THE DOUBLE PURPOSE OF CONTROLLING FLOODS AND DEVELOPING WATERPOWER. ABOUT 40 PER CENT OF THE CAPACITY OF THE RESERVOIR IS USED FOR FLOOD CONTROL AND THE REST FOR PRODUCING POWER, WHICH IS SUPPLIED TO 14 TOWNS AND 154 VILLAGES

Army was to be the chairman. The objection which has recently occurred to me in connection with this form of organization is that it takes these various services in a measure out of the direction and control of the department chiefs and subjects them to the control of a policy formulated by the service chiefs only. I have, therefore, come to the conclusion that it would be better to organize the department chiefs in whose departments are included the various services referred to into a Board of River Regulation, of which several additional members should be engineers and constructors of eminence, to be appointed by the President. The department chiefs could then bring into coordination the various services referred to through subsidiary boards and other forms of organization, and could thus bring them all into practical cooperation. The River Regulation Board would then consist, not of the service chiefs, but of the department chiefs, the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the engineers and constructors of eminence appointed by the President. Such a board would be like the board of directors of a corporation, and would, of course, rely upon the subor-

dinate boards and services for the full development of plans and works.

Such a Board of River Regulation would be the agency of the National Government for cooperation with the States, which would act through similar boards, and thus we would have team work upon the part of the various departments and services of the United States that have any interest, near or remote, in river development, and also team work between the Nation and the States upon the same subject-matter. We would thus avoid any encroachment upon the jurisdiction of the various sovereignties affected. The jurisdiction of the States within their field of operations would be recognized, and that of the National Government similarly recognized; but the powers, activities, and funds of all would be so employed as to make the work of each contribute to the advancement of the work of all.

With a view to proper plans and works it would be necessary for us to make up our minds at the start as to the expenditures to be made and to create a fund for that purpose. The National Government should contemplate an expenditure of not less than \$50,000,000 annually for the next ten years and should prepare for this

by the creation of a fund for that purpose. Not only comprehensive plans and continuous work should be provided for, but simultaneous work should be contemplated in all sections of the country. No national movement can be successful which is directed only to the development of a favored section. The Mississippi Valley is no more entitled to consideration than are the other valleys of the Pacific, the Gulf, and the Atlantic Coast. The magnitude of its area will entitle it to the bulk of the annual appropriation, but the problems are national, not sectional, and the policy should be as broad as the Nation itself.

The bill which I have been urging for years upon this subject has provided for a River Regulation Board consisting of the service chiefs to which I have referred, of which board the Chief of Engineers of the Army should be the chairman, and for a fund of \$50,000,000 and contemporaneous work in all sections of the country.

It is my purpose to amend this bill by substituting a board of department chiefs for the board of service chiefs contemplated in my original bill. I shall also, in a tentative way, segregate the fund of \$50,000,000 annually between the different watersheds, with a view to insuring the support of all sections, upon the assumption that no section will be favored.

Roughly speaking, I should say that out of a total of \$50,000,000 annually the rivers of the Atlantic Coast should receive \$10,000,000; of the Gulf Coast, outside of the Mississippi River, \$5,000,000; of the Pacific Coast, including the Columbia, the Sacramento, and the Colorado Rivers, with their tributaries, \$10,000,000; and the Mississippi River, with its tributaries, \$25,000,000 annually, of which \$10,000,000 should be apportioned to the Mississippi River and its tributaries up to Cairo, \$5,000,000 to the Mississippi River and its tributaries above Cairo, \$5,000,000 to the Ohio and its tributaries, and \$5,000,000 to the Missouri River and its tributaries.

Such a bill ought to receive the support of all sections of the country. Whilst it is desirable as far as practicable to protect this work from political influences and political mutations, it is, of course, both important and necessary to connect the President and his department chiefs with it. This can be accomplished through the organization of the department chiefs referred to; and the mutations of politics can be guarded against by the non-partisan character of the expert engineers and constructors who will serve with the department chiefs on the River Regulation Board, and whose presence will secure a continuous policy free from the influences of party mutations.



A WORLD'S FAIR FOR SAN DIEGO

By IRVIN GRAHAM LEWIS

*"ALL previous expositions have been devoted chiefly to showing the products of man. There never has been an exposition portraying the 'how' of things, the processes whereby man brings forth products. * * * At San Diego will be no idle machines; all will hum with activities, for this is to be an exposition teaching not what is done, but how things are done." The "mission" type, because it is native to Southern California, has been chosen as the architectural theme of the entire celebration.*

SAN DIEGO, the most southwesterly city in the United States, will celebrate in 1915 the completion of the Panama Canal with the Panama-California Exposition, designated "the exposition of opportunity." Its purpose is to reveal to the world the opportunities for expansion among the nations most directly affected by the construction of the canal. Ten nations have already given definite assurance of participation in this enterprise and others are considering the invitation to install exhibits.

The projectors of the exposition expected that foreign participation would be restricted to the countries of Central and South America, but China recently gave notice through the State Department at Washington of an intention to send representatives here soon to arrange for the installation of a display. The republic of Panama, Brazil, Santo Domingo, Porto Rico, Guatemala and San Salvador previously gave similar notice, and their exposition commissioners are now arranging exhibits. Hawaii's participation is virtually assured, and there is much indication that Spain, Canada, Hayti and Peru will be in the list, with possibly several other nations of Central and South America.

Several features mark the San Diego exposition as one of original ideas. It is to be the first exposition to continue its exhibition period throughout an entire year. The gates will open January 1, 1915, and close on December 31. One type of architecture will be employed, from the largest exhibit building to that of the smallest concession.



Its theme is entirely original, a rule being that every display must show some process. There will be no mere display of products. Only about one-third of the exposition grounds will be covered with buildings, the remainder being devoted to demonstration of how things are done out of doors.

All previous expositions have been devoted chiefly to showing the products of man. There never has been an exposition portraying the "how"

of things, the processes whereby man brings forth products. The idea of a great display of processes belongs to Col. D. C. Collier, president of the San Diego exposition, who recognized the gripping human interest attending any exhibit that portrayed life, action. To the development of this idea and its application to the splendid picture outlined every effort is being made by the exposition forces.

Such a marked departure from exposition precedent is founded upon realization that every step in the progress of man has been taken through some abandonment of the beaten path. Somewhere, sometime, somebody struck out into a new way of doing an old thing. The new way proved better, and human society adopted it. To portray man's progress in these things is the theme of the San Diego exposition.

Once man ground grain between two flat round stones to procure meal; to-day great power-driven machines perform this labor. Once the stage coach provided transportation; to-day palace cars race across a continent. Once all clothing was woven by hand; to-day machinery does this work. Once man drove an ox team and turned a single furrow with a small plow; to-day

giant tractors, dragging gang plows, turn a dozen furrows. Little or no change in products has resulted, but in the processes employed there has been revolution. The story of this revolution is to be told by the active employment of all these appliances, used by all peoples in all ages of the world. The musical instruments of ancient peoples will be played, not merely seen. In such an exposition it is believed Japan fits with peculiar appropriateness, due to the wonderful development of industrial and other processes in that country in the last half-century.

The accepted exhibitional theme has shown fruits of the field piled high on counters; shelves of canned goods; tables loaded with needlework, etc.; rows of idle machines, showing either products or the machines of production. At San Diego will be no idle machines; all will hum with activities, for this is to be an exposition teaching not what is done, but how things are done.

No other exposition project ever reached such a stage of progress toward completion as that of San Diego at this time, two years in advance of the opening date. The actual construction work was inaugurated in December, 1911. Three distinct periods of construction were outlined. Ground grading, planting and nursery establishment and the erection of necessary administration buildings were planned for 1912. The year 1913 was outlined as a period of building erection,

a rule being that every structure should be finished by January, 1914. For the final year of preparation was devised a program of ornamentation of grounds and buildings, finishing of all walks and streets, installation of displays, and the concluding endeavors of the landscape architects.

This program has been followed with close adherence. The end of 1912 found all drives, walks and boulevards brought to grade and in large part surfaced. All building sites had been leveled and made ready for foundations. Thousands of trees and a wide variety of plants and flowers had been placed about the grounds, and the making into fact of the landscape gardener's dreams was begun.

One of the architectural features of the exposition is a bridge of seven arches, spanning a picturesque canyon in the grounds. This bridge will constitute the approach from the principal entrance to the plateau upon which the central group of exhibit buildings is being erected, and work on this great structure is advancing rapidly. The bridge will be 900

feet between approaches, 105 feet above the lagoon at its base, and 40 feet wide, of steel-reinforced concrete, and is destined to stand throughout centuries as a part of the permanent development of the great park of 1,400 acres in which the exposition is being built.

The site is pronounced by world trav-



ERECTING A 900-FOOT BRIDGE TO SPAN A PICTURESQUE CANYON IN EXPOSITION PARK, WHICH IS TO BE PERMANENTLY MAINTAINED BY THE MUNICIPALITY



LOOKING SEAWARD ACROSS THE CITY

THE SITE OF THE EXPOSITION LIES ON A PLATEAU FROM MANY POINTS OF WHICH THE CITY OF SAN DIEGO, HER SPACIOUS HARBOR AND THE PACIFIC OCEAN ARE SEEN SPREAD OUT IN A SPLENDID PANORAMA

elers to be the finest possible for such an exposition. It embraces 615 acres, of which only 225 will be covered with buildings. There will be in actual operation large and small farms, orange groves, garden patches, demonstration fields for farm machinery, etc.; into the sides of the hills will be driven mines in actual operation, employing all sorts of machinery, from the crude hand windlass of the past to the big electric hoist of the present; irrigation systems in miniature, teaching the visitor how the farmer of irrigated land controls and distributes the water that, in the final analysis, is his source of livelihood. From these processes will come products, but when the demonstration of the process of production is complete the product will disappear.

This site is on a plateau from many points of which San Diego, her spacious harbor and the Pacific Ocean are seen spread out in a splendid panorama, and yet this park of 1,400 acres is surrounded by the structures of the city, and its principal gate is only ten minutes walk from the shopping district. In the great nurseries now established are growing a million and a half specimens of plant life from all over the world, surrounded by their usual environment by means of hot and cold frames, sub-irrigation and overhead sprinkling systems. It is proposed to show 3,000,000 specimens of plant life during the exposition. The most comprehensive horticultural exhibit ever assembled is planned, to be shown in an

unique structure, a house of lath 600 feet square and 100 feet in height.

True to program, the year 1913 was marked by the inauguration of building activities. The plans are drawn for nearly all the central group of exhibit buildings, and erection of several is under way; this work is being rushed as rapidly as material can be assembled. The storm-water and sanitary sewer systems are complete, as is also the system of water mains. Every telephone, telegraph, and power wire will be in conduits underground. Contracts have been placed by states for state exhibit buildings, and soon the activities of workmen will be extended to the construction of these buildings.

Architecturally, the San Diego exposition will be unlike any other ever projected. In 1540, Cabrillo, a Spanish explorer, sailed into the bay. Here, in 1769, Junipero Serra, a Spanish friar, established the first white settlement on the Pacific Coast in the United States, and "California began." With the coming of Serra began the development of the distinctive type of architecture popularly known as "mission," and technically as Spanish-Colonial. Because this type is a native of Southern California, and because it insures splendid harmony with inexhaustible possibilities of variety in detail and ornamentation, it was chosen as the architectural theme of the entire celebration. It is the result of blending the Moorish architecture of Spain with the pueblo



A TRIUMPH IN MISSION ARCHITECTURE

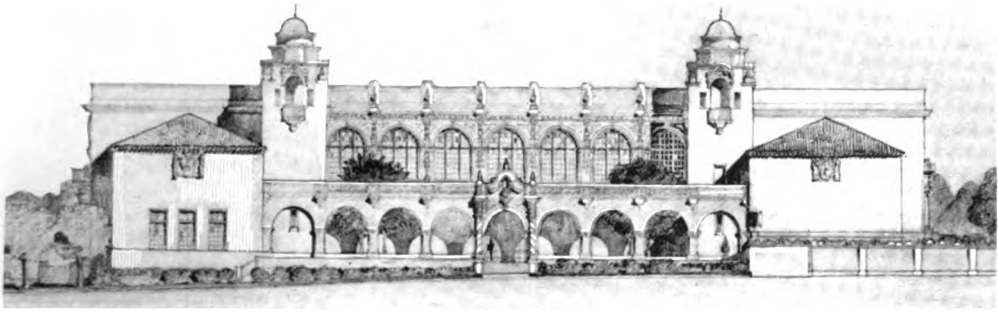
ideas of the Aztecs and other aboriginal tribes of North America.

San Diego, tucked away in an empire with its splendid harbor, is now developing in population and business activities by leaps and bounds. The secret of this growth is the development of irrigation projects in the wonderful semi-arid and arid territory lying to the eastward. There is being constructed a new civilization, and San Diego is the logical seaport for a vast acreage destined to become a granary. To meet the increased commerce expected through cultivation of this land and the operation of the Panama Canal, extensive harbor improvements are under way, and a railroad through this section is being constructed. Since the exposition was projected two years ago, San Diego has doubled in population. Building activities in 1912 amounted to over \$10,000,000, and industry and commerce are increasing rapidly.

Incidental to this activity in preparation, the City of San Diego has secured from the State ownership of her water front. Extensive docks and wharves are being built under municipal bond issues, and dredg-

ing operations are going forward around them. The nature of the harbor is such that it practically scours itself except in one or two locations where a small amount of dredging keeps the channel clear. There is more deep water inside the land-locked harbor than in any other of similar area, and the safe anchoring ground under the sea-wall is limitless in expanse. Harbor improvements now under way will cost \$6,000,000 when completed, the harbor lines being so favorable that one-third the expense necessary at every other harbor on the Pacific Coast of North and South America will suffice here. Docks 2000 feet long, of reinforced concrete and double-decked, warehouses, wharves, all are to be of the most substantial character, and the whole harbor system will be operated as a "free harbor" under city control. That public control of harbor facilities is a vital factor in promoting the growth of cities is shown by the experience of European ports.

No less than seven great steamship companies have already secured dockage accommodations here and two railroads will serve the shore end. Five steamship com-



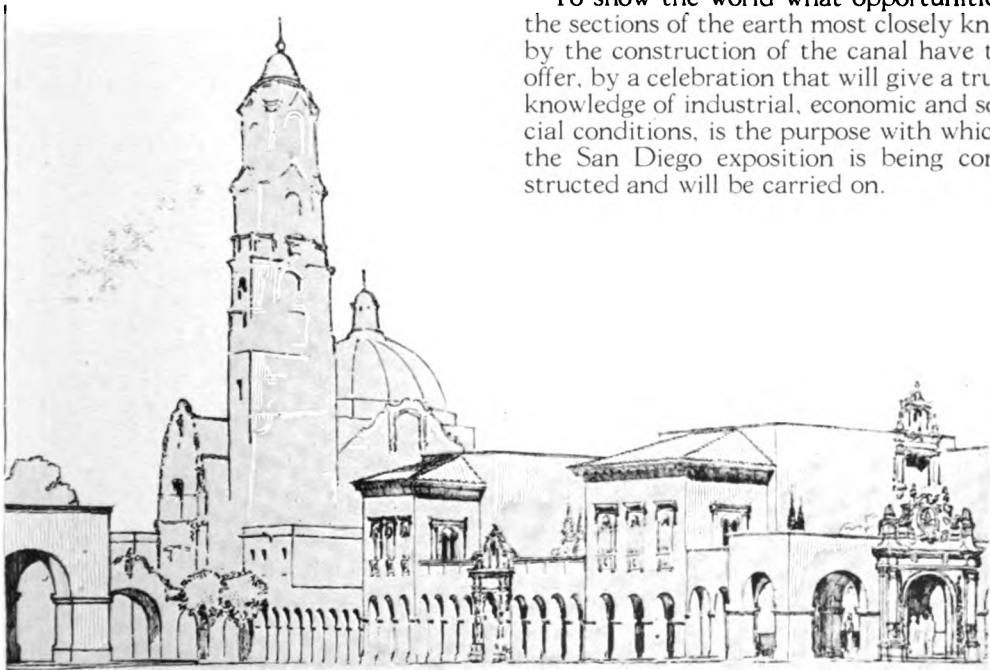
A COMBINATION OF MOORISH AND AZTEC TYPES

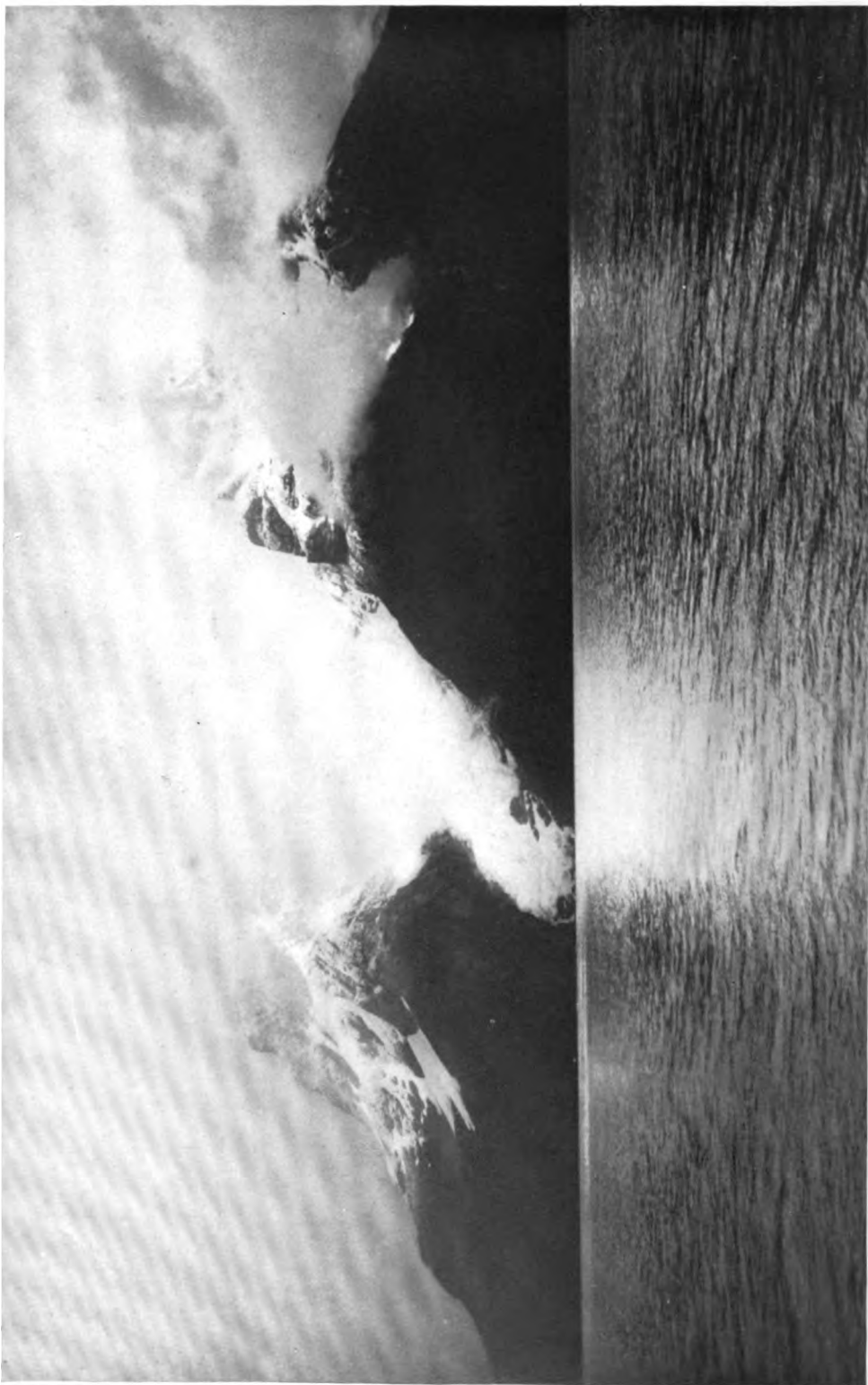
panies now operate regular boats to and from the harbor, and with the completion of the first unit of the city dock system there will be one wharf at which two 800-foot steamers may be berthed on each side of the wharf at once. All other wharves will be of the same character. These improvements are to be finished by July, 1915.

It is believed that through the Panama Canal will flow a great tide of commerce and immigration, opening vast opportunities for trade expansion and investment.

Every nation that can be expected to benefit because of the building of the canal, either by reason of immigration inflow with its resultant investment opportunities, or because of the expanded commerce between the "canal nations," has been invited to participate. Japan was among the first of the foreign nations to propose an exhibit here, and within a few years San Diego expects a large development of commercial relations between the American Southwest and the Flowery Kingdom.

To show the world what opportunities the sections of the earth most closely knit by the construction of the canal have to offer, by a celebration that will give a true knowledge of industrial, economic and social conditions, is the purpose with which the San Diego exposition is being constructed and will be carried on.





Courtesy Pan-American Union

MOUNT SARMIENTO, TIERRA DEL FUEGO

"As we reached the southern extremity of Magdalen Channel, just where it makes a sudden turn into Cockburn Channel, we floated into a beautiful land locked bay surrounded by glittering, snow-mantled mountains. In the southeast corner, standing like a white draped sentinel guarding his icy realm, we saw Sarmiento, mountain king of the southernmost Andes, raising his snow-capped peak 7,310 feet into the misty veil of clouds which hid the remotest points from view.

THROUGH THE STRAIT OF MAGELLAN

By EDWARD ALBES

"THE sun burst through shifting clouds and gave us pictures of light and shade of shimmering snow on distant peaks, of vegetation, light green where the bright rays flashed and darker olive hues where shadows fell. For miles the Strait mirrored the cloud-flecked skies as would a polished looking-glass, while circling around the slow-moving ship the snowy gulls and albatross lent beauty to the scene." The beauty and the dark history of the Strait of Magellan are alike graphically pictured by Mr. Albes.

IT was early on the morning of March 2, 1912, that the *Bluechers* swung around in a somewhat choppy sea and headed straight for the dimly outlined coast lying directly east. Four days ago we had left Valparaiso and its genial warmth of summer, its fruits and flowers, its glittering lights, electric cars and all the sights and sounds of modern civilization, and now we were about to enter the coldest, bleakest, most dangerous and yet the most romantic and picturesque waterway in the southern hemisphere—the Strait of Magellan.

Quite long ago it seemed since early boyhood studies had been brightened, and the commonplace of geographical facts given a tinge of romance, by the story of Magellan's daring exploit in sailing into this untried sea to give mankind a way to circumnavigate the globe and add much to what was then the sum of human knowledge. As the two great rocks that mark Cape Pillar came plainly into view on our starboard side something of the old-time thrill returned, for the selfsame view of rocks, and the sea on which we sailed, had gladdened the heart of the great navigator of nearly 400 years ago, when he emerged in triumph from the narrow, tortuous, dangerous passage that ever after bore his name.

Perhaps a paragraph or two of historical retrospect may not be amiss just here, if only to revive dim recollections of youthful studies and to serve as an introduction. Fernando de Magalhaens was Portuguese by birth, but was in the service of the Spanish crown when he left Seville on August 10, 1519, with his small fleet of still smaller



vessels to find a way around the world. Five little ships there were, the largest—the *Trinidad*—of 130 tons and 62 men, while the smallest—the *Santiago*—boasted of but 60 tons and 30 men. And with these he set out to keep his promise to his king to find a passage to the far East.

The winter was spent at Port St. Julian, where cold and hunger played havoc with his crews. Even the hides on the ships' yards were eaten to

keep from starvation and mutiny was overcome by the hanging of one of the ring-leaders, while one of the ships deserted and returned to Spain. Magellan's iron resolution was not shaken, however, and on October 21, 1520, he discovered the jutting point which he named Cape Virgins, and the eastern end of the Strait was entered.

In the face of icy blasts from the Antarctic regions, half-starved and with almost incredible hardships and toil, the expedition almost felt its way along and finally, on November 27, emerged into the Pacific. Thus was blazed not only the pathway to the East, but the subsequent circumnavigation of the earth gave final proof that it was round and much greater in circumference than the geographers of the time had even dreamed.

Magellan himself, as is well known, came to his death in an encounter with the natives of one of the Philippine Islands and never reached his native shores to reap the reward for his successful enterprise. Only one of the little vessels, the *Vittoria*, succeeded in returning to Spain with but 31 members of the daring expedition left.

After Magellan's discovery of the waterway numerous other bold explorers dared its dangers, invariably at the expense of ships and human lives. Garcia Jofre de Loyosa succeeded in passing through in 1526, losing one of his ships, the *Santi Spiritus*, and many of his men. Some of the expeditions failed to get even as far as Cape Virgins, and because of the numerous disasters the Spaniards finally abandoned the route almost altogether, until a certain bold Englishman—another picturesque figure that stands out in the Valhalla of our youthful fancy—Sir Francis Drake, in 1578, passed through and up the coast as far as California, and thence plowed his furrow in the seas around the world. As the old Spanish chronicle hath it:

"Peru was at peace, when for our sins, some English pirates pressed through the strait of the Mother of God, formerly called the Strait of Magellan, into the South Sea, under the command of Francisco Drac, a native of Plymouth, a man of low condition, but a skilful seaman and a valiant pirate."

Wherefore Spain deemed it necessary to establish a colony in this neck of the waters to protect the passageway, and sent one Pedro Sarmiento with an expedition and some unfortunates for this purpose. The colony was established not far from where Punta Arenas is now located, and what with hostile Indians, cold and starvation, it was soon wiped out of existence.

In 1598 the Dutch appeared on the scene and one Sebald de Wert spent some nine months in trying to get through from the Atlantic to the Pacific, but failed. By the end of the seventeenth century the Fuegian Archipelago became the refuge of various and sundry gentlemen of fortune called buccaneers, and thus was added another element to the dangers of the Strait. In the early part of the nineteenth century the important English expedition, consisting of the *Adventure* and the famed *Beagle*, explored the Fuegian Archipelago and partially mapped and charted the passages.

Mount Darwin here perpetuates the name of the great author of "The Origin of Species," who accompanied this expedition.

But we must return to the *Bluecher* and resume our passage in from the Pacific. Steaming close to the grotesque pinnacles and sharpened rocks of Desolation Island, outlined just now against a leaden sky, we see, lying immediately northeast and on our other side, the dreary waste of King William IV Land. As we proceed the Strait begins to narrow and, by the time we are gliding along between Santa Ines Island on the south and Cordova Peninsula on the north, both shores seem almost close enough to be in range of an ordinary pistol shot.

And then began a series of slowly shifting scenes of rugged ice-capped peaks, and blue-green glaciers sweeping down from mountain heights, their opalescent hues changing each instant as the snowy blanket covering them lay thinning in the warming sun. The skies had cleared, and for once the western end of this famous passage was to be traversed in fair weather. Not ten such days in a year, our special pilot said, were granted to those who made the journey through the Strait. Our lucky star seemed in the ascendant and not an

unpleasant incident marred the pleasure of this memorable day.

The great backbone of the South American continent, the longest and highest mountain range known to the world, is broken here and the sea has filled the narrow, tortuous vale between its separa-

ted peaks. Great bluffs of brown and grey, topped by crags of glittering ice and snow, hang over the water's edge, while here and there a valley forms the bed of glaciers, those solid rivers which bear their slow, resistless way to the lapping waves, there to be broken off when the Storm King lashes the waters into fury, and thus are added great blocks of floating ice to the picturesqueness as well as to the dangers of the way.

Between the shifting clouds the sun burst



Courtesy Pan-American Union
ON SANTA MARTA ARE SEEN THOUSANDS OF PENGUINS



Courtesy Pan-American Union

A SUCCESSION OF EVER-CHANGING PICTURES

BETWEEN THE LAZILY DRIFTING CLOUDS THE BRIGHT SUN BURSTS THROUGH AND TURNS THE DULL WHITE SNOW COVERING THE HIGHEST CRAGS INTO SHIMMERING, GLITTERING SILVER

through and gave us pictures of light and shade, of shimmering snow on distant peaks, of vegetation of light green where the bright rays flashed and darker olive hues where shadows fell. For miles the Strait was calm and mirrored the cloud-flecked skies as would a polished looking-glass, while circling around the slow-moving ship the snowy gulls and albatross lent beauty to the scene.

The aquatic life of the Strait proved of great interest. Several islands we passed were almost covered with penguins, while on one we saw two large sea-lions rearing their heads in mute astonishment at sight of this great monster churning its ponderous way through their domain. Whales were often seen sporting at a little distance, and upon the near approach of the steamer would sound, their huge tails showing high out of the water as they took their headlong dive to the depths below. Schools of large fish, a species of porpoise probably, played about the vessel, shooting sometimes in pairs from the crest of one wave into another, their silvery bodies, with black heads and tails, visible in the trans-

lucent water for fifty feet or more as they darted along with arrow-like swiftness.

As we passed Cape Froward, the southernmost tip of Brunswick Peninsula, Captain Witt decided to leave the regular course and turned southward into one of the numerous branches of the Strait, Magdalen Channel, to give us a view of Mount Sarmiento, the highest peak of Tierra del Fuego. As we reached the southern extremity, just where it makes a sudden turn into Cockburn Channel, we floated into a beautiful land-locked bay surrounded by glittering snow-mantled mountains. In the southeast corner, standing like a white-draped sentinel guarding his icy realm, we saw Sarmiento, mountain king of the southernmost Andes, raising his snow-clad peak 7,330 feet into the misty veil of clouds which hid the topmost points from view. Two great glaciers showed their opalescent blue shimmering through the delicate coverlet of crusted snow, and came down to the very water's edge, while here and there fell little cascades of water from the melting snows above. Close to the mountain's base the *Bluecher* stopped,



Courtesy Pan-American Union

THE SOUTHERNMOST CIVILIZED VILLAGE IN THE WORLD—USHUAIA, ARGENTINA
SITUATED ON BEAGLE CHANNEL, ON THE SOUTHERN COAST OF TIERRA DEL FUEGO. SEVERAL HUNDRED OF THE MOST DES-
PERATE OF ARGENTINA'S CONVICTED CRIMINALS ARE KEPT HERE IN STRONG PRISONS AND UNDER GUARD

and here we stayed for over half an hour, drinking in a scene which for rugged grandeur and rare beauty excels even the famed fjords of Norway or the great glaciers of Alaska.

Every camera on board was brought into play to catch the wondrous views and to preserve mementos for future years, but how could photographic film picture the glint of golden sunshine on crystal snow and sapphire ice, the soft tints of violet, pink and gold as the declining sun painted the drifting, fleecy clouds that floated in fantastic, ever-changing shapes in a sky of deepest blue?

At last the vessel's ponderous engines resumed their interrupted throbs—the deep-toned farewell blasts from its great whistle awakened a thousand echoes and startled the denizens of the vast solitudes for miles around, as slowly we turned about and left behind the most southern point that most of us had ever reached and scenes whose striking beauty would linger long in memory.

Our next stop was at Punta Arenas (Sandy Point), the southernmost city in

the world. About five hours from the time we left Mount Sarmiento we saw the electric lights of that little city and felt that once more we were in touch with civilization. We anchored overnight and the next morning our boats took us to the long pier which juts out into the Strait from this interesting little metropolis of the Antarctic regions.

Although the weather was fair and the sun was shining, the cold south wind "cut like a knife" and overcoats and wraps were needed on this bright summer day in the far South. It was Sunday and the stores were closed, but it was soon noised about that a party of tourists had arrived, and the thrifty fur and curio dealers and jewelry shops opened their doors to gather in a few shekels from the "Norte Americanos." Many of the tourists invested in the beautiful guanaco skins, unique Indian baskets, ostrich eggs and feathers, and so-called chinchilla furs which subsequently turned out to be rabbit skins.

There is nothing especially attractive about the city, but it has considerable life

and energy, considering its chilly location. The streets are straight and wide and are laid out parallel with and at right angles to the shore, while the houses are of frame and corrugated iron. It boasts of one very imposing residence, whose owner's wealth was accumulated in the sheep industry and who prefers existence here to any place in fairer lands.

Sheep, by the way, are the chief excuse for Punta Arenas' existence. Beneficent nature somehow makes wool grow longer and fleecier on sheep which are condemned to live in a climate that almost, but not quite, freezes them to death. Hence southern Patagonia and Tierra del Fuego have become great sheep countries.

Wool, frozen mutton, furs, Indian curios, ostrich feathers and coal are the things which Punta Arenas has to sell. When steam became the motive power for vessels, the Strait of Magellan lost some of its terrors. The sudden icy storms, the currents and general perversity of the waters which made it too dangerous for sailing vessels, were defied by the powerful steamers and it has now become the usual route for several regular lines. Then coal was found near Punta Arenas—not such very excellent coal, but still something that would burn—and now it has become a regular coaling station for all vessels that ply between Atlantic and Pacific ports. The population of Sandy Point is about the most cosmopolitan for its size that the writer has seen. Sailors and adventurers from every country may be found here and Spanish, English, French,

Portuguese and almost any other language may be heard on its streets.

Sunday afternoon our whistle blew its farewell blasts and we steamed eastward toward the Atlantic. The portion of Tierra del Fuego that we could see was flat and uninteresting and soon the Patagonian shore grew likewise. We passed Second Narrows and near it saw the masts of a sunken ship. Another wreck was passed and then another as we emerged from First Narrows, the last showing the funnels of a steamer. Evidently the Strait is still levying its toll.

At last we rounded Cape Virgins, the point which Magellan had first seen and named. We had traversed the route which his little ships had found, and a new admiration for one of our boyhood's heroes had been born. Sunshine and gentle zephyrs had attended our passage of a waterway where usually the icy winds of the Antarctic sweep in fury over broken crags whose caps are never free from snow. The channel had been smooth as glass, though oftentimes it is lashed by storms into a raging, seething mass of smashing waves which rend and tear and toss great ships like toys. Fortune had smiled and cast a glamor of beauty over mountain peaks and glaciers, over placid bays and quiet waters that mirrored skies of softest blue and cloudstinted with rainbow shades. It was as though we had "sailed o'er a summer sea," and of all the pictures we had seen on our long journey none promised to linger longer in memory than those of Magellan's dreaded Strait.



Courtesy Pan-American Union

GREAT BLOCKS OF FLOATING ICE ADD TO THE PICTURESQUENESS AS WELL AS TO THE DANGERS OF THE WAY

ON THE TARIFF BATTLE-LINE

By EDGAR C. SNYDER

*"It is a fact that a personality is more interesting than a proposition of conduct. * * * The men who have here passed in review, taken from widely different sections of the country, are natives of the States which they now represent in either Senate or House, with the single exception of Oscar W. Underwood, who was born in Kentucky. The white light beats upon them, and they are typical of that American life which is a mosaic made up of different surfaces, different colors, different figures."*

FOR the first time in twenty years a Democratic House of Representatives has passed a tariff bill with every prospect of its passing the Senate in much the same form it came from the lower house. The Underwood bill, named after the Chairman of the Ways and Means Committee, is now before the Committee of Finance of the Senate, to be reported out about June 1, and until August it will be debated from every angle.

With the dry abstractions of the tariff it is not my purpose to treat. It ought not to be, but it is, nevertheless, a fact that a personality is more interesting than a proposition of conduct, and men will discuss an individual when they will not take the trouble to carefully discuss what that individual claims he stands for. And it is of the personages who have taken and who will take a prominent part in the making of the Underwood bill that this article will deal in a friendly human way.

Under the rule of King Caucus, Oscar W. Underwood, the Chairman of the Ways and Means Committee, has been able to pass a measure which represents Progressive Democracy in its best sense, and with preeminent ability has steered it through the shoals without so much as the change of a single syllable except those sanctioned by the Caucus.

For nearly twenty years the Representative of the Birmingham district of Alabama has been a member of the House of Representatives, and has participated in the consideration of a number of tariff bills. During that time he has crossed swords with many of the wheel horses of Republicanism and has broadened and strengthened intellectually with the passing years.

Shunning the spotlight, although by reason of his commanding position forced to bask therein, he has displayed statesmanlike qualities of a high order in bringing antagonistic interests in his own party to the support of a measure that must necessarily become the leading issue in the Congressional campaign of 1914.

Unlike many men in public life, Oscar Underwood has carried throughout his Congressional career a gentleness and a chivalry that is refreshingly typical of the Old South. Probably no finer tribute could have been paid Mr. Underwood than that accorded him by his political opponent, James R. Mann, of Illinois, the leader of the minority, when during the closing hours of the debate on the bill which bears his name, Mr. Mann told the House that 51 years ago "one of the ablest men in public life first saw the light of day," and congratulated "the Democratic party and the American people, that during the 51 years of his life there has grown to greatness and bigness the able gentleman from Alabama, Mr. Underwood."

Like all men intensely absorbed with the solution of the gripping problems of political economy, there come, now and then, playdays, in which the cares of legislation are thrown aside for God's great out-of-doors. His completest rest, however, is found on the porch of his home in Birmingham, with a good detective story that has just enough action in it to set the blood atingle.

While in no sense an orator, Mr. Underwood has kept the majority intact by the sheer force of his ability and his honesty, and has won for himself an exalted place in the gallery of American statesmen.

Of high character, a man of force and unbending determination, is A. Mitchell

Palmer, of Pennsylvania, one of Oscar Underwood's chief lieutenants in the making of the tariff bill. Mr. Palmer comes from an old and distinguished Quaker family, and is himself a consistent member of the Quaker Meeting. So consistent is he in his religion (this can be said with absolute truthfulness) that he declined the portfolio of Secretary of War because he was a Quaker and a descendant of those who stand for peace and not for war.

The new Democracy of Pennsylvania owes much to A. Mitchell Palmer, for it was largely through his efforts that the organization of the Democratic party was taken from Col. J. M. Guffy and the old-line Democrats; and he, more than any other, is responsible for the vote which Pennsylvania cast for Woodrow Wilson in the Baltimore convention.

Mr. Palmer, during the discussion of the tariff bill, gave one the impression not only of self-assertiveness but of self-reliance as well; always willing to listen, yet he was never afraid to assume responsibility. As a lawyer he tries his case with the same confidence in its righteousness as he manipulates the Democratic policies of his native State.

Mitchell Palmer, I should say, is not one of those, who, to sympathize with their fellow men in the abstract, join in deference to them in the concrete, but, rather, he takes men with a good deal of "salt," for he cannot avoid showing that his ancestors were gentlemen and ladies. Strong of physique, a lover of sports, the excitements of politics, however, give him the greatest pleasure, and there are those in Pennsylvania who predict for him a still greater political career as Governor or United States Senator of the Keystone State.



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FATHER OF THE TARIFF BILL
 REPRESENTATIVE OSCAR W. UNDERWOOD,
 OF ALABAMA, CHAIRMAN OF THE WAYS
 AND MEANS COMMITTEE

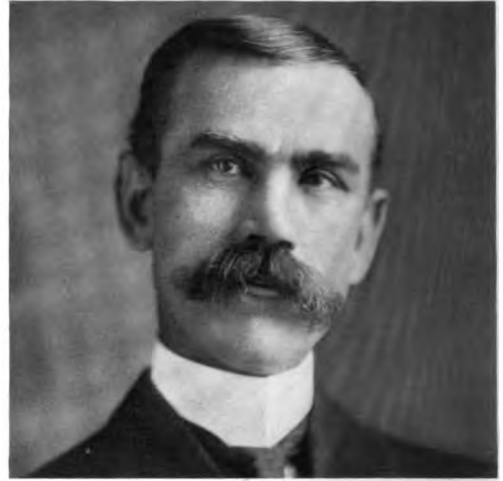
Probably next to the distinguished Chairman of the Ways and Means Committee, no other member of that committee made greater or more important individual contributions to the bill now in the Senate than Cordell Hull, of the Fourth Tennessee district. Indeed, the feature of the tariff bill from which it derives most prominence, the income tax amendment, must be credited to the legislative genius and skill of Mr. Hull.

It is an interesting and noteworthy coincidence that the income tax amendment in the old Wilson tariff bill and the income tax amendment to the Underwood tariff bill should have been written and offered by Representatives on the Ways and Means Committee from the Fourth Tennessee district. Former Congressman Benton McMillan wrote the income tax amendment in the Wilson bill, and now, after a quarter of a century, Cordell Hull performs a like service for the Underwood bill.

His service of three terms in the House is a plain story of persistent, indefatigable and conscientious devotion to work. His public career has been kept in perfect tune with the old copybook maxim that "whatever is worth doing at all is worth doing well." Hull is a tireless student of economics, a patient and industrious delver into the mines of economic literature that yield the greatest returns of utilitarian value. He never wastes his energies nor his time upon the pursuit



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THE CHAIRMAN OF THE COMMITTEE ON FINANCE, SENATOR FURNIFOLD M. SIMMONS, OF NORTH CAROLINA

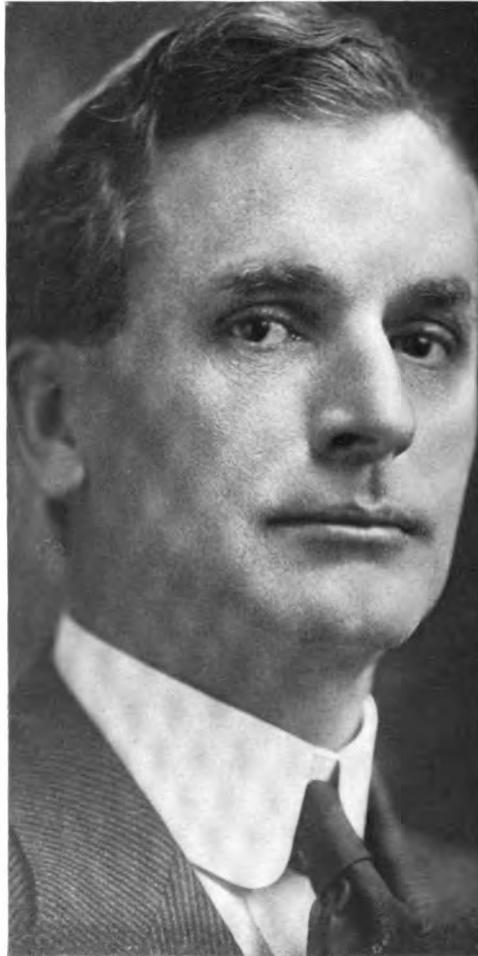


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SENATOR REED SMOOT, OF UTAH, "WHO WAS BORN A MATHEMATICIAN."

of the futile or the non-essential.

Cordell Hull always works by a chart. The thing must have value, or he turns from it as something not worth while. He never goes off half-cocked, as it were, but fires his oratorical gun after the most careful and deliberate aim. Not yet 42 years of age, he is far advanced on the road towards those milestones at which constructive statesmanship has recorded its best and noblest achievements.

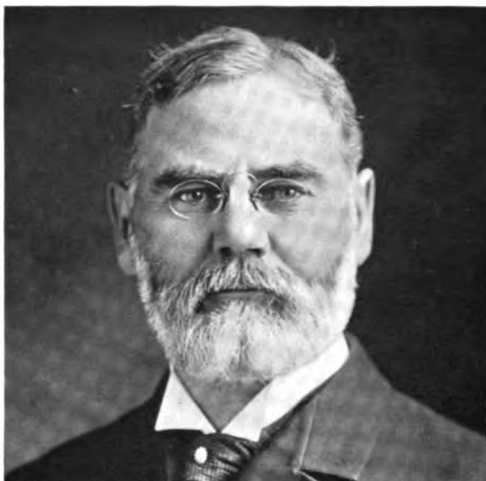
On June 26 of this year Sereno Elisha Payne, of Auburn, N. Y., will have spanned the allotted three-score years and ten, thirty of which have been spent in the service of his country as a member of the



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REPRESENTATIVE CORDELL HULL OF TENNESSEE, WHO WROTE THE INCOME TAX PROVISION OF THE TARIFF BILL

House of Representatives. To-day, he is the "father of the House," the godfather of the American protective policy, and the third of that trinity of Republican tariff law framers of which McKinley and Dingley were the other two.

Though somewhat inclined to embonpoint, to speak it gently, his inheritance of health from a sturdy English ancestry and his early life on the farm have stood him in good stead. Despite the nerve-racking task he has in recent years undergone in the making of a tariff law on which he, as Chairman of the Ways and Means Committee, worked night and day for over a year, and his active participation



JOSEPH E. RANSDALL, OF LOUISIANA, THE FIGHTING SENATOR FROM THE LAND OF "EVANGELINE"

© Harris & Ewing
REP. JAMES R. MANN, OF ILLINOIS. "A THORN IN THE FLESH OF THE DEMOCRATS"

in the debates on the tariff bill but recently closed in the House, the opposition still finds him a doughty champion of that protection to American industries, which, as he expresses it, "make up the difference in cost of production at home and abroad."

In the heat of campaigns he has frequently been accused of "playing to the interests" in matters of tariff legislation. So often has this charge been made that many of the uninformed have come to accept it as true. No better refutation of the charge can be cited than the remark of the late Senator Jonathan P. Dolliver, of Iowa, who so bitterly opposed the amendments of ex-Senator



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"BATTLING BOB"
SENATOR ROBERT MARION LA FOLLETTE, OF WISCONSIN, WHO BELIEVES IN OPENING COMMITTEE HEARINGS TO THE PUBLIC

Aldrich to the original Payne bill. Senator Dolliver said:

"If I were President and they would give Sereno Payne free hand to write a tariff bill along his own lines, I would be willing to sign it with my eyes closed!"

One delightful thing about Mr. Payne is that he has the good will of all factions of the House; they admire him for his political ideals, however much his opinions may differ from theirs. You would not think it, but he plays golf occasionally and is a familiar figure among the baseball fans at the park when the game is on. He is exceedingly fond of the modern novel. At other times, when not inquiring into

the condition of the Treasury, his favorite diversion is a dinner with two or three of his old political cronies, followed by an evening of pleasant reminiscence.

"What are the distinguishing charac-



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SENATOR JAMES A. O'GORMAN
OF NEW YORK, A FORMER GRAND SACHEM OF THE TAMMANY
SOCIETY, AND A POLISHED STATESMAN

teristics that have made the legislative career of James R. Mann, of Illinois, so signal a success?" I heard one newspaperman ask another during a lull in the tariff debate. My own judgment is that it is his power of analysis, his indefatigable industry and his ability to state a question with crystal-like clearness.

"Jim" Mann, as he is called by friend and foe alike, has probably a more comprehensive knowledge of that which relates to the Nation's business than any other man in public life, and over and above all is his fearlessness and his uncompromising attitude toward his friends who try to "put something over" on the House under the guise of patriotic service. He hates duplicity as the devil hates holy water.

Born in Gilman, Ill., a little town on the Illinois Central, forty miles from Chicago, "Jim" Mann early set out to become a leader, and in order to qualify himself for leadership entered the Illinois University, from which he graduated. During his boyhood he was a profound reader of literature, and delved deep in economic questions.

Probably the measure which brought him the greatest fame, and which won for him a high place among the constructive statesmen of his time, was the remarkable knowledge he displayed during the discussion of the pure food bill, of which he was the father. He amazed the House with his learning, and the "school" which he conducted during the progress of the debate on the bill showed him one of the most resourceful and one of the best equipped men of his time.

But Mr. Mann is not diplomatic at times. His attitude of reserve does not tend to draw men close to him, but outside the halls of legislation, when recess comes, "Jim" Mann is a rare companion, a versatile talker and a good listener.

In sharp contrast to James R. Mann is Victor Murdock, "the red-headed and strenuous" Progressive from Kansas. Whereas, the former is a master of detail, Victor Murdock would not know detail if he met it in a public highway. He is preeminently a newspaperman, and a remarkable judge of public opinion. Courageous to a degree, and grimly persistent for that for which he stands, Victor Murdock is a natural born fighter.

Born in 1871 in Wichita, then a frontier

village, he began his newspaper career on his father's paper, the *Daily Eagle*, where, as a "cub" reporter and "star" man on the "city" staff, he early attracted attention as a picturesque writer.

The frontier town, however, did not hold out the allurements of Chicago, and desiring a wider field he gravitated to the city by Lake Michigan, where he went to work. Later, however, he returned to Wichita and became managing editor of the paper his father had founded, and with which he has been connected in an editorial capacity ever since, notwithstanding he is serving his sixth term in Congress.

At times vitriolic in speech, even waspish in his sarcasm, Victor Murdock cannot help being enthusiastic; it is his nature to be sanguine, for is it not so written in his hair?

So much for the men of the House of Representatives who have played their parts in the debates on the Underwood bill. What of the men who have yet to play their parts during the progress of the debates in the Senate?

Beneath a smiling suavity of manner there is a determination on the part of Senator Furnifold M. Simmons, of North Carolina, Chairman of the Committee on Finance in charge of the Underwood tariff bill, which cannot help but command respect as the debate on the measure moves along. Senator Simmons is credited with a capacity for concentration and persistency in whatever he undertakes that is bound to bring him applause as well as commendation during the months the bill is under consideration.

The senior Senator from North Carolina has both physical and mental convictions, but those who know him well doubt whether he has caught the note of that conspicuous trend in modern thought which points toward more efficient human service. His political life has largely been one of political strife. In the old days, when ex-Senator Zebulon B. Vance was the most popular man in the "Old North State" and one of the leaders of the Senate, Simmons had his disagreements with Vance, and always held his own, notwithstanding that he was then a young man and making his early essay in politics.

While Senator Simmons is a firm be-



REPRESENTATIVE A. MITCHELL PALMER
OF PENNSYLVANIA, ONE OF UNDERWOOD'S CHIEF LIEUTENANTS

liever in himself, he subordinates the "ego" under stately dignity.

Fifty-three years ago Senator James A. O'Gorman was born in what was then called Greenwich Village, now a part of

the City of New York, but known to the older inhabitants as the old Ninth ward, or the "Old American ward." Full of history, it had a picturesqueness which even the encroachment of a mighty metropolis could not wholly take away.



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 REPRESENTATIVE SERENO E. PAYNE
 OF NEW YORK, FORMER CHAIRMAN OF THE WAYS AND MEANS
 COMMITTEE.

Senator O'Gorman is one of the delightful men of the upper branch of Congress with a personality that is wonderfully engaging. His has been a life in the law. He has been in a sense a Pro-

gressive Democrat ever since the time when he ran for a local judgeship on the Henry George ticket as a protest against old political conditions, and, what is rather remarkable, in a vote of 20,000 was defeated by only 1,200. From 1893 until 1899 he served on the district bench of New York City. In the latter year he was elected to the Supreme Court bench, where he remained until 1911, when he was elected to the Senate as a compromise candidate.

Senator O'Gorman, impatient to rectify injustice and to further human welfare, has a pure and strong sympathy with his fellow men. Believing implicitly in the Democratic doctrine, he said to me shortly after the Underwood tariff bill had been reported to the Senate: "We are going to carry out the pledges of the party with the fervent hope that the legitimate interests of the country will suffer no embarrassment; but the fundamental note in the tariff is the exclusion of special privileges."

During his years at the bar and on the bench Senator O'Gorman's reading was necessarily along legal lines, but as a student at the College of the City of New York, and at the University of New York he delved in books on philosophy, on history, the development of nations and related subjects. Adam Smith's "Wealth of Nations," Professor Wayland's "Political Economy," and the writings of Herbert Spencer were his guides, and he has followed in their footsteps since student days.

One thing about Senator O'Gorman that will be found especially uppermost during the debates on the tariff is that he is the embodiment of that universally recognized principle of the "square deal" as popularized in the comprehensive term which a former President coined. He knows how to respect vested rights so long as they do not encroach upon the rights of the masses, but he stands for the masses.

Throughout his whole career Senator O'Gorman has shown a warm sympathy for his fellowmen and an independence of thought decidedly refreshing in these parlous days of combinations and trusts. He was among the first of a splendid galaxy of earnest, thoughtful men to agitate against the aggressions of private monopoly, and with such associates as Francis

B. Thurber and Henry Nichols, formed the Anti-Monopoly League, through whose efforts legislation was enacted directed against unlawful combinations and defining the manner of their dissolution.

For many years the junior Senator from New York has spent the summers in Europe with his family, loving the out-of-the-way places of the Old World with their quiet charm and restfulness.

Senator O'Gorman is a member of the Tammany Society, or the Columbian Order, as it is sometimes called, which was incorporated in 1820, and organized to combat the monarchical tendencies of the Order of the Cincinnati. He was Grand Sachem of the Society for several years, being succeeded by former Representative Bourke Cochran.

Another of the Democrats upon whom the spotlight will fall during the next few months is Senator Joseph E. Ransdell, of Louisiana, who is one of the most interesting and forceful men in public life to-day. Before entering the upper branch of Congress Senator Ransdell had thirteen years' experience in the lower house, and by dint of great intellectual worth, tact and tireless energy he has gained an influence at the National Capital wielded by few statesmen. While standing with his party upon the fundamental principles that underly it, he has not hesitated to take a pronounced stand against free sugar, on the ground that it will do irreparable injury to one of the leading products of his State, and he stands uncompromisingly for the old commonwealth.

His one thought has been the development of "Dixie." He is a staunch believer in the New South, that South that Henry Grady spoke about in one of the greatest orations of a century. Believing in the general proposition that questions are settled by being taken to the people, not by being kept from them, he has gone to his people for their support, which they have never denied him. Mr. Ransdell has been most active during his years in Congress in having the rivers and harbors of Louisiana and other waterway States improved and the levees of the Mississippi strengthened to prevent overflow. For more than six years he has been President of the National Rivers and Harbors Congress, which has become the most



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REPRESENTATIVE VICTOR MURDOCK
THE RED-HEADED, RED-HOT, LIVE WIRE FROM KANSAS

powerful waterway influence in America.

One of the towering figures of the Senate, both physically and mentally, is Boies Penrose, of Pennsylvania. Upon him much of the fighting for the protection theory, in which he is a most profound believer, will devolve. Although by many regarded as just a bit "lazy," Senator Penrose is, in many respects, one of the busiest men in political life.



"THE LONG AND SHORT OF IT."
THE LEADER OF THE REPUBLICAN
MINORITY IN THE SENATE, BOIES
PENROSE OF PENNSYLVANIA, AND
HIS COLLEAGUE, SEN. GEORGE T.
OLIVER

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As Chairman of the Committee on Finance in the Sixty-Second Congress, and now the ranking minority member of that committee since the Senate has passed into the control of the Democrats, Senator Penrose will in all probability have charge of the metal schedule, the textile schedule and those other schedules of the tariff bill in which his native State of Pennsylvania is so vitally interested.

Early in his career in the Senate, Senator Penrose became a member of the Finance Committee, an honor which had never been accorded to either of the former Senators from that State, Matthew S. Quay and "Don" Cameron; and, in the gradual evolution of things, he became its chairman. He was active in assisting Ex-Senator Aldrich frame the Payne bill, and he showed great constructive ability.

Born in Philadelphia, in the old Penrose homestead where he still resides, he

early decided upon a political career and set his sails accordingly. Having fitted himself for Harvard, he began the study of political economy, having been brought up on John Stuart Mill at the University, but Mill's theories of taxation did not appeal to the young Pennsylvanian, and he gravitated to the theories of protection with a deep-seated conviction that the protective theory of government was right. He has been an enthusiastic student of the ancient classics; Cicero, Homer, Shakespeare, and the early dramatists, Fielding, Fletcher and Beaumont, have been his literary companions. He does not care for modern literature, but rather reads those authors who have stood the test of time.

Senator Penrose is essentially an out-of-doors man; he loves to sail a boat and hunt big game in the mountain fastnesses. Every summer for the past twenty years he has made hunting trips into Wyoming, Idaho and Montana, and he knows the West quite as well as he knows his own "City of Brotherly Love."

Reed Smoot, of Utah, is another of the Republicans upon whom much of the fight will fall during the next couple of months in an endeavor to change the duties provided in the Underwood bill. He is the opposite of Boies Penrose in almost everything, except in his Republicanism.

Senator Smoot was born a mathematician; if he can reduce a problem to mathematics he is entirely satisfied with the conditions presented. His is a logical, analytical mind, with a penchant for business and its ramifications. He took hold of the Provo Woolen Mills as a boy and lifted them out of the slough of despond. In his time he has been a successful banker and merchant, and is interested in many kinds of business in his native State.

It is impossible for Reed Smoot to be interested in either big or little things without putting his soul in the work. He would make a success at anything, which is a peculiarity with some men. His training has been one of silence, not of speech, and he knows more than he can tell. An elder in the Mormon church and a believer in its teachings, he takes his religion as a practical thing, not one of mysticism.

I should say that his tastes are not literary; he has little sentiment in his make-up, but is what the world calls a "good mixer," making acquaintances readily. What is rather remarkable about him is that he is a baseball "fan," and a confirmed "rooter" for the home team. He is aggressive, with a kind of stubbornness that makes him a formidable factor in either business or debate.

This arbitrary selection of a number of the Nation's legislators who have been large in the public eye since their entrance into political life would be incomplete without a word of that picturesque character who is known the country over as "Battling Bob," Robert Marion LaFollette, of Wisconsin. He well deserves his name, for there has not been a more insistent, consistent and persistent fighter for a cause in a half-century than this same "Little Bob," who still calls himself a "Republican," but with decided progressive leanings. Fearless to the point of recklessness sometimes, he gives blows and takes them with an equanimity at once the wonder and delight of his friends.

When Senator LaFollette made his fight in Wisconsin for state-wide primaries he first wrested the control of the State machine from the stalwart crowd. Having accomplished this purpose his friends wanted him to pursue the old methods to retain control and disregard the primaries; but LaFollette would not listen. Although he was jeopardizing his position—as was exemplified in the first election under the new primary law, when he tried to nomi-

nate Congressman Lenroot but was overwhelmingly defeated—having decided that the primary was the best method to secure results in the State, he stuck tenaciously to the principles for which he fought and eventually had the satisfaction of seeing them succeed.

Probably the best example of LaFollette's bulldog tenacity of purpose is seen in the enactment of his bill for the physical valuation of railroads. In 1906 it was looked upon as the dream of an idealist, and was laughed out of Congress; but in the closing days of the Sixty-Second Congress he saw the much-despised bill become the head of the column and written upon the statute books upon broader lines than he had ever hoped for.

Senator LaFollette is a many-sided man. He is an omnivorous reader, being fond of the lighter literature of the day as well as the drama. He loves folklore stories, and has a rare fondness for reading them aloud to his family and friends. He likes companionship, but despises dress parade. In all essentials he is a man's man, with a profound belief in Robert M. LaFollette.

Remarkable as it may seem, the men who have here passed in review, taken from widely different sections of the country, are natives of the States which they now represent in either the Senate or the House, with the single exception of Representative Oscar W. Underwood, who was born in Kentucky. The white light beats upon them, and they are typical of that American life which is a mosaic made up of different surfaces, different colors, different figures.



THE NEWEST GREYHOUND OF THE LAKES

By ARNOLD R. CORNELL

"DURING the last ten years magnificent side-wheel ships have been added to the Lake Erie fleet, but none of these is as large, or as complete, as the steamer 'Seeandbee.' Nowhere else is there a side-wheel ship as large as she. Five hundred feet over all, 97 feet 8 inches extreme breadth over the guards, with a hull depth of 30 feet 4 inches at the stem and 27 feet 1 inch at the stern, she leads all of her type."

STEAM navigation on undulating waters was first practiced on the Great Lakes a year before the first commercially successful steamship left Black Rock, N. Y., now part of Buffalo. The steamer *Ontario* began a rather calamitous career on the easternmost of the chain of lakes, Lake Ontario. That was in 1817, ten years after the *Clermont* had demonstrated the practicability of steam navigation. On that venerable ship, which a decade before had startled residents on the banks of the Hudson by moving against the current without sails or aid from shore, the shaft and paddle wheels were of sufficient weight to hold them in place on the smooth surface of the river. Builders of the *Ontario*, unacquainted with the force of waves, assumed that wooden blocks would hold down the shaft, and thereby almost lost their boat.

In 1818, when the *Walk-in-the-Water*, better known as the steamboat, was under construction, the motion of the waters of the Great Lakes was reasonably well understood. That little ship, 135 feet from stem to stern, 32 feet across decks and 8 feet 6 inches deep, was the pioneer of the lakes. Loaded to capacity, she could accommodate 100 passengers in her cabin. For four seasons she earned a handsome profit, operating between Buffalo, Cleveland, Detroit, and the smaller ports between terminals.

As navigation became general on the Great Lakes the type of ship was more or less changed. On Lake Erie the greatest passenger ships are side-wheelers, as ex-



perience has demonstrated that this class of ship is in all ways preferable for the service. The greater breadth affords more commodious cabins and sleeping accommodations and insures greater steadiness while the vessel is under way.

Since the advent of the *Walk-in-the-Water* there have been interruptions in the water service between Lake Erie ports; panicky times for lake boats followed the introduction of railroad competi-

tion, but for only a few years were the railroads without telling water rivalry. As the steamboat grew in completeness, comfort and beauty, and the harbors were enlarged, the public patronized the ships more and more until the traffic between Buffalo, N. Y., and Cleveland, Ohio, today demands the largest sidewheel ship in the world.

When a traveler boards one of these lake liners he expects all the comforts of a modern hotel, together with the service of de luxe trains. He has been educated to these things and in each new ship every effort is made to add more services, conveniences and comforts.

During the last ten years magnificent sidewheel ships have been added to the Lake Erie fleet, but none of these is as large, or as complete, as the steamer *Seeandbee*. Nowhere else in the world is there a sidewheel ship as large as she. Five hundred feet over all, 97 feet 8 inches extreme breadth over the guards, with a hull depth of 30 feet 4 inches at the stem and 27 feet 1 inch at the stern, she leads all of her type.

Wherever it was possible steel was given

the preference in the ship. Her hull is entirely of steel and is divided into three compartments. Above the main deck fireproof doors permit passage from one end of the ship to the other. The vessel has a double bottom separated from stem to stern and side to side into fourteen watertight compartments, while above the water line eleven transverse bulkheads form compartments, extending from the water line to the main deck. Sides, housings, beams and underfloorings are also of steel. Even in the cargo hold steel fire curtains separate the compartments.

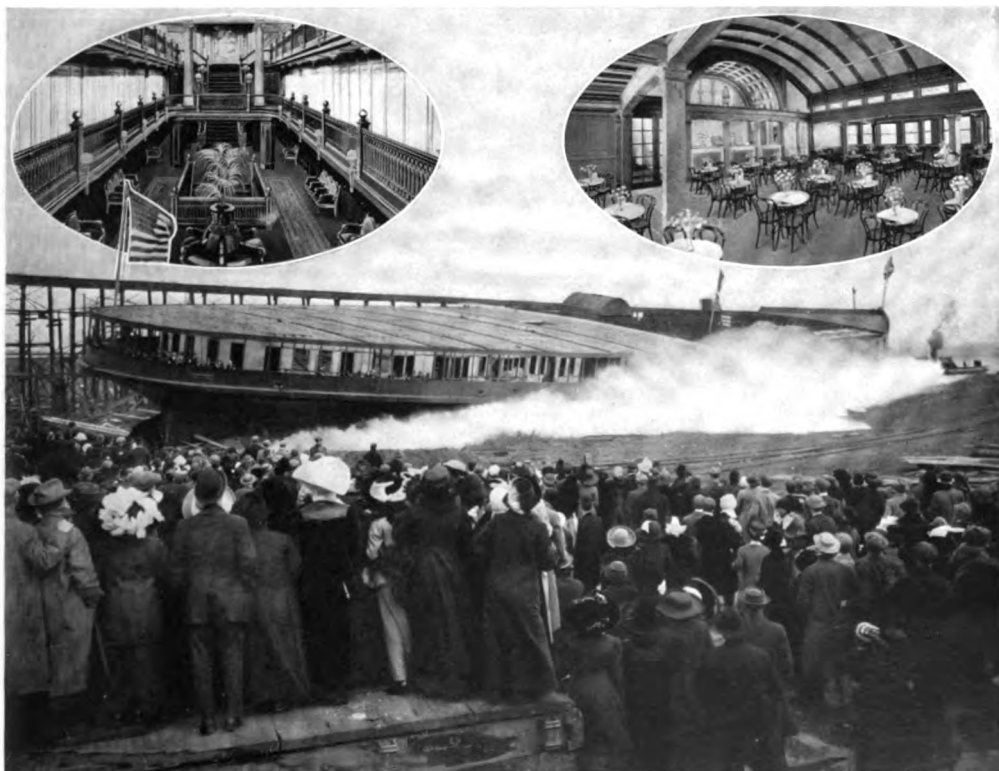
Her mechanical equipment holds a similar record. Never before has a lake shipyard produced a marine engine of 12,000 horse-power, nor is any other side-wheel ship equipped with so much motive power.

The propelling machinery represents the highest type of engine building on the lakes, and equals the best engines built anywhere for marine purposes. It is of the

three-cylinder, inclined, compound jet condensing type. The high-pressure cylinder is 66 inches in diameter, while the two low-pressure cylinders are 96 inches in diameter and weigh more than thirty tons each. Extreme care was used in selecting steel for the crank shaft. This is perhaps the most important part of the mechanical equipment, and to make it absolutely safe 20 tons of the highest grade of carbon steel were cast into the shaft for the *Seeandbee*.

Weight will again indicate the great size of other parts that went into this ship. The steel paddle wheels weigh 108 tons each. They are 32 feet 9 inches in diameter and are equipped with 11 curved buckets 15 feet 5 inches wide.

To drive this powerful engine six single-ended and three double-ended marine boilers, built to carry 165 pounds of steam to the square inch, were installed. A speed of 22 miles per hour is guaranteed.



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THE LAUNCHING OF THE "SEEANDBEE"

THE "SEEANDBEE," WHICH IS TO PLY DAILY BETWEEN CLEVELAND AND BUFFALO, IS NOT ONLY THE LARGEST SIDE-WHEEL STEAMER ON THE GREAT LAKES BUT THE LARGEST IN THE WORLD. AT TOP, ON LEFT, GRAND SALOON; AT RIGHT, THE LOUNGE.

although the ship could be driven faster if occasion demanded.

Sidewheel steamers on the Great Lakes conform essentially to one style of interior architecture—the lobby is on the main deck in the after part of the ship. On the *Seeandbee*, purser's and steward's offices, parcel room, telephone booths, baggage rooms and lunch counter are off the lobby through which all passengers enter, and from which a large stairway leads to the main saloon on the promenade deck, with



ONE OF THE TWO LOW PRESSURE CYLINDERS OF THE "SEE-AND-BEE." THEY ARE EACH ABOUT 13 FEET LONG AND WEIGH OVER 32½ TONS—ONE OF THE LARGEST SINGLE CASTINGS EVER MADE.

the gallery deck above. This great court, 400 feet long, is impressive with its mahogany wainscoting, pillars, enameled panels, mural decorations and high ceiling devoted to a single design.

In the after end of the gallery deck in the main saloon, forward of the ladies' drawing room, which is on the promenade deck, is a balcony for an orchestra. Above the ladies' drawing room on the upper deck is the atrium, a den and flower stand, with an open well into the drawing room. On the upper gallery deck amidships, a large comfortable room, looking out over the water through bay windows, furnishes a place to lounge. It is a general meeting place for men and women.

For years it was customary to have the

dining-room in the after part of the ship below the main deck, but in this ship the dining-room is on the main deck, with observation windows along the sides, instead of the customary port holes. Below, in the space formerly devoted to the dining-room and directly under the dining-room on this ship, is the buffet designed and finished like the interior of an old English tavern. Entrance is from the main deck aft.

Through the ship the main decoration is mahogany. Murals, enamels, fancy oak finishes and tapestries in keeping with special sections relieve the interior of the stiffness and sameness of solid colors.

Accommodations for 1,500 persons have been provided in 510 staterooms and parlors, and Government permit may be obtained for carrying 6,000 passengers. Every stateroom has running water, telephone and forced ventilation. Sixty-two staterooms have private lavatories adjoining, while twenty-four parlors have private bath-rooms.

Bulkheads, sprinkler system, fire stations extending into every department, and signals, ensure the maximum degree of safety. Auxiliary engines, pumps, dynamos, ice machines, ventilating fans and scores of other appliances, are independent of the main engine and have distinct crews of engineers.

Were one to lodge in the largest hotel of a metropolitan city of the United States, he could find no more than he will on this ship. From barber-shop to clothes-dressing establishment, from French chef to parlor maid, the service is complete. Leaving the terminal ports early in the evening, the traveler has the pleasure of an open air ride, if he chooses, free from the smoke and stuffiness of land transportation. When he retires, his sleep is not disturbed by the jarring sensation of wheels on steel tracks; his berth is not close and hot, and when he arises, he does not have to go to a small compartment to wash at a common basin, or breakfast in a hurry that he may be ready to alight at the station a few miles away.

Travel by steamship on the lakes is more like going into a palatial hotel on the seashore. And that is what has made the lake routes popular and the immense investment in such a ship as the *Seeandbee* practical.

TO OLD MEXICO BY CANAL

By LEON LOCKE

*CROSSING the bayous and rivers, and by means of them fully communicating with the more densely populated interior, the Intercoastal Canal traverses the Gulf Coast. * * * * Louisiana is the 'youngest' state, and was formed—let the scientists guess how many thousands of years subsequent to the other states—and still it is not 'fully grown'.* As Secretary of the Interstate Inland Waterway League, Mr. Locke has labored assiduously for the project which will link the Mississippi Delta with the Rio Grande.

FROM the Mississippi River to old Mexico by inland waterways—such is the scope of the big project popularly known as the Intercoastal Canal. And it is more than a project, for the canal, or chain of canals, is already completed from the Mississippi to the Mermentau, in Louisiana; from Orange and Beaumont, Texas, to Port Arthur and Sabine Pass; from Galveston to the mouth of the Brazos River; through Matagorda Bay, which is navigable for its entire length, to Pass Cavallo, and from the latter point to Corpus Christi. Work is in progress on the section between the Mermentau and Sabine Rivers, in Louisiana, and on the section between the Brazos River and Matagorda Bay and thence to the Colorado River, and these are virtually ready to be turned over to the Government.

Thus there will be created a great protected waterway along the coast of the Gulf from the Mississippi River to the Rio Grande, which marks the frontier between the United States and Mexico, and this avenue for the tremendous oil, cotton, sugar and rice traffic of the Texas and Louisiana seaboard will traverse a very empire of natural resources.

The project dates back to 1873, when the survey for the greater part of the route was authorized by Congress. The report of Major Howell, who conducted the survey at that time, was so complete in detail, and so accurate, that later examinations have verified in almost every particular his statements and conclusions as to soil and riverways. Much of the survey



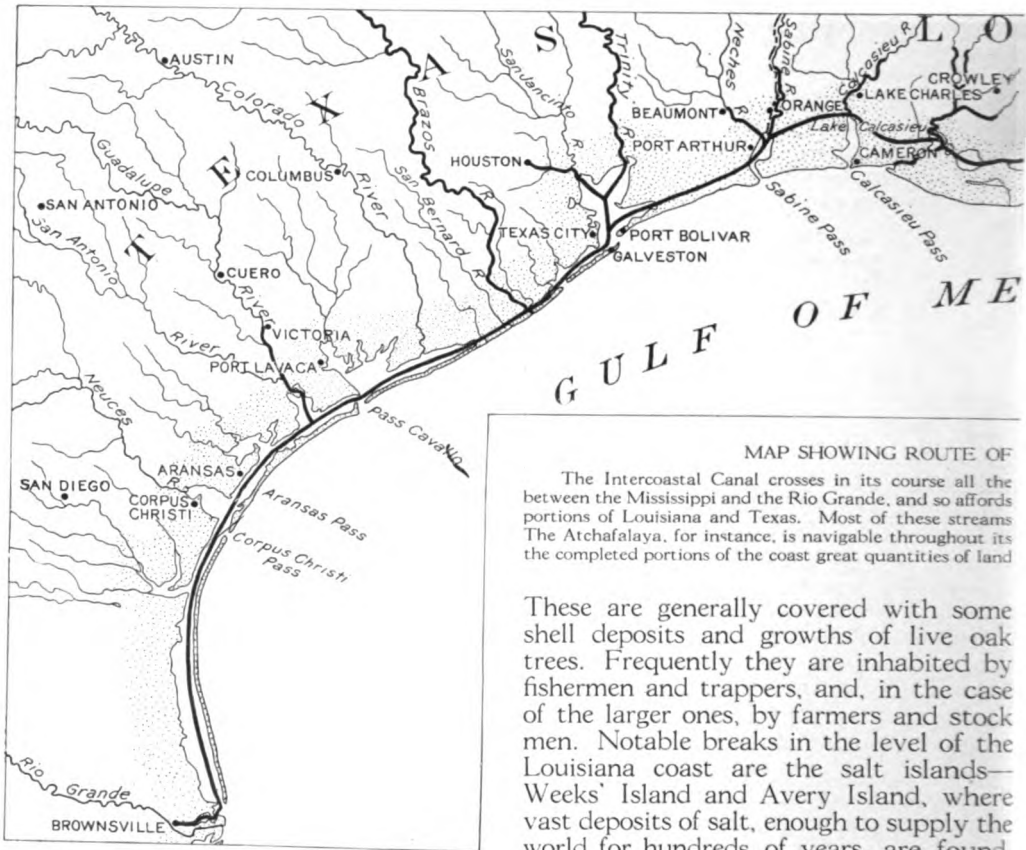
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had to be made through almost impassable marsh and over "trembling prairies," as the jelly-like mud overgrown with marsh grass and cane on the Louisiana coast is called.

Not until within the past few years, however, has any actual progress been made in the work. The project had its renaissance in 1905, when a convention was called by Hon. C. S. E. Holland of Victoria, Texas, to meet in that city, and the Interstate

Inland Waterway League was organized. The purpose of the League is to promote the canal and to urge the improvement of the contiguous and tributary rivers and waterways. This work is done by the collection of facts and figures for presentation to the Board of Engineers and to the Rivers and Harbors Committee of Congress, and by cooperation with all agencies to secure consideration and favorable action by these bodies.

Annual conventions of increasing interest have exhibited the zeal of all the people of the coast of Louisiana and Texas, and the earnestness of their desire to obtain relief in the way of transportation and to secure the benefits of reclamation which such a canal must bring. The efforts of the organization have resulted in favorable reports by the Board of Engineers, and the passage of bills by Congress making appropriations for certain sections of the waterway. The last convention, held in Morgan City, Louisiana, in October, 1912, demanded by resolution the recognition of the project in its entirety, and the completion of the work under continuing contract.



MAP SHOWING ROUTE OF

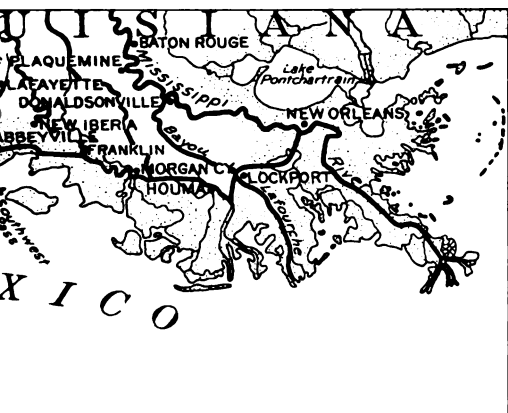
The Intercoastal Canal crosses in its course all the between the Mississippi and the Rio Grande, and so affords portions of Louisiana and Texas. Most of these streams The Atchafalaya, for instance, is navigable throughout its the completed portions of the coast great quantities of land

These are generally covered with some shell deposits and growths of live oak trees. Frequently they are inhabited by fishermen and trappers, and, in the case of the larger ones, by farmers and stock men. Notable breaks in the level of the Louisiana coast are the salt islands—Weeks' Island and Avery Island, where vast deposits of salt, enough to supply the world for hundreds of years, are found. These islands, containing several thousands of acres of land each, rise from the level around them to a height of over two hundred feet. Further west the coast line has ridges which extend in narrow strips paralleling the Gulf and dividing the marsh from the sea. These ridges are inhabited and cultivated and the soil is reasonably fertile, producing an excellent variety of cotton of long fibre, the fine Louisiana sweet oranges, corn, peas and vegetables.

The coast of Louisiana is low marsh, broken occasionally by the deep, slow streams that wind through it; these streams, as is characteristic of all alluvial waters, have banks somewhat higher than the surrounding country until the sea marsh proper is reached, when the bayou or river passes through the savannahs covered with salt grass, slender stemmed canes and other growth, changing from deep rivers into broad and shallow bays, showing the cooperation of land and sea forces, of bayou and gulf in the construction of more land surface. A part of the silt and soil carried by the Mississippi is swept westward from the mouth of the river and deposited along the coast—a work that has been going on for centuries. Borings have shown in places a depth of alluvial soil of 3300 feet.

Throughout the marsh there are often found so-called islands, which are in reality eminences of from two to ten feet above the level of the surrounding marsh.

Development of the lowlands of the coast has begun in earnest. Great reclamation schemes are being projected and the success of the methods is assured, as the crops demonstrate. These plans may be briefly described as the casting up of a levee around the land to be reclaimed and the use of large pumps to pump out the water into the adjacent waterways or marsh. The regulation of the water supply on the land reclaimed, together with the great richness and fertility of the soil, make these reclaimed lands most attractive to cane, truck and fruit growers.



THE INTERCOASTAL CANAL

bayous and rivers which empty into the Gulf of Mexico direct connection with the more densely populated interior are much larger than the tracing on the map would indicate. entire length and has a depth of from 25 to 150 feet. Along are being reclaimed by the same methods used in Holland.

Louisiana, as is known, is the "youngest" State, and was formed—let the scientist guess how many thousands of years subsequent to the other States—and still it is not "fully grown." In fact the Louisianians are charged with being there before nature got ready for them to occupy the land. That may be true of many another section also, but man is not always willing to patiently await the slow processes of creation and organization by natural forces, and, as the doctor frequently says, he proposes to "assist nature." The levee and outlet system of the great Mississippi is an exhibition of the impatience of the men who were not content to wait for nature to fill the lowlands along the river with silt, but built their own levees, and,

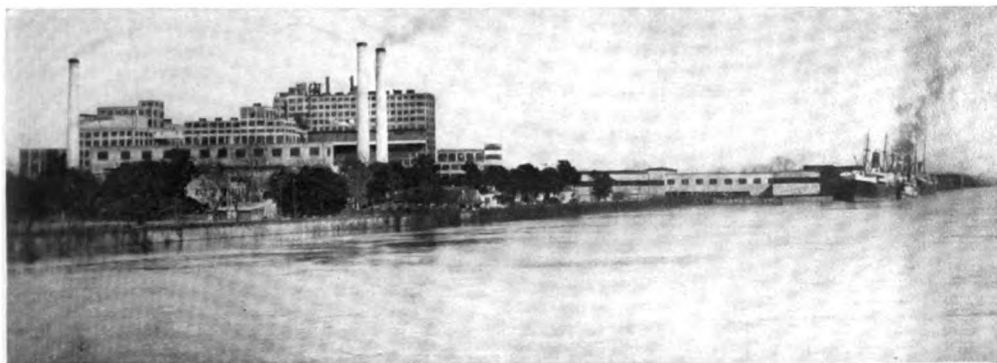
like King Canute, demanded that the waters keep to their own and not spread inland. Occasionally they fared as the old king did, and the year of 1912 was one of those times, but the lesson, and the good to ensue, and the certainty of relief by the Federal Government in combined levee and outlet construction, form another story.

Not until recently have surveys, except the superficial and the most necessary ones, been made by the Government. Now navigation and industrial progress are demanding greater knowledge, and the Department of Commerce at Washington, through the Coast and Geodetic Survey, is sounding and exploring, and new charts are constantly being made.

Louisiana's contribution to the commerce of the nation annually is far greater than is generally known. But one State—Washington—exceeds her in the production of lumber, and she is first in cane sugar, in rice, in sulphur, and in sea foods. In 1911 some of the products were: 35 million bushels of corn, 325,000 tons of cane sugar, 11 million bushels of rice, one million barrels of salt, 10 million barrels of petroleum, 300,000 tons of sulphur, to say nothing of the fruits and vegetables that grow so abundantly and with so little expenditure of labor.

The marsh is an excellent grazing country—and thousands of cattle are pastured the winter through with no other feeding than the nutritious grasses and canes of the coast.

The intercoastal canal now is serving as the transporting line for much of this



WHERE TRANSPORTATION TAXES REACH THE LOWEST POINT

THE AMERICAN SUGAR REFINING COMPANY, AT NEW ORLEANS, CAN RECEIVE RAW MATERIALS AND SHIP FINISHED PRODUCTS BY ANYTHING FROM A WHEELBARROW TO A FREIGHT TRAIN, FROM A ROWBOAT TO AN OCEAN LINER



PORT ARTHUR, TEXAS, LOCATED ON SABINE LAKE, BECAME A SEAPORT WHEN A PRIVATE COMPANY BUILT A CANAL 25 FEET COST. SOME TWO MILLION TONS OF FREIGHT, CONSISTING PRINCIPALLY OF PETROLEUM AND ITS PRODUCTS, COTTON,

product, and its completion means our easy, cheap communication with the markets of the North, enabling us to secure coal and machinery from Pittsburgh, and merchandise and supplies from Cincinnati, Louisville and St. Louis,

at water rates. This relief, and the incidental, but none the less immense, benefit brought by reclamation—for following canal construction on the coast immediately comes reclamation, drainage and cultivation—are the things we are striving



GALVESTON'S RESIDENTIAL THOROUGHFARES SUGGEST THE TROPICS

IN THIS SPLENDID GULF CITY FULL ADVANTAGE HAS BEEN TAKEN OF THE OPPORTUNITIES AFFORDED BY THE CLIMATE TO BEAUTIFY THE SPACIOUS GROUNDS ABOUT THE PALATIAL RESIDENCES OF HER PROSPEROUS CITIZENS



DEEP WHICH GAVE ACCESS TO THE GULF OF MEXICO. IN 1906 THIS CANAL WAS TRANSFERRED TO THE GOVERNMENT. FREE OF LUMBER AND GENERAL MERCHANDISE, AND VALUED AT ALMOST \$50,000,000, WERE HANDLED HERE LAST YEAR

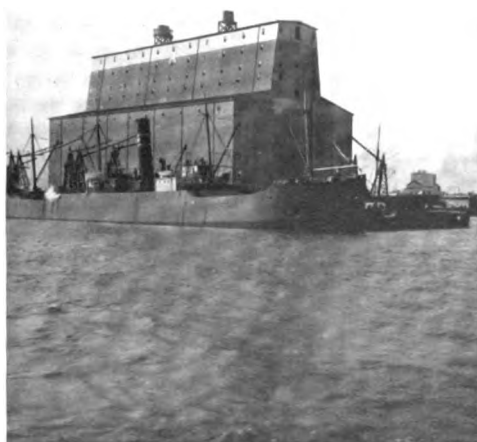
for. Louisiana has not yet come into her own and cannot independently of the aid of the other States. When her fair sisters of the North begin to see in the shy Creole of the South all her richness and love and sunny warmth, and give her place among them, then will her virtues immediately expand and she will add to the strength of the Union as she has not, because of many chains, been able heretofore to do. The help of the Government in levee work will free her from one burden, construction of the intercoastal canal will lift another.

As to Texas, great, glorious, self-assertive State, she can boast for herself. The name Texas suggests nothing that is not wholesome and free. Figures are vain, for the combined products of rich Louisiana will not purchase her one year's cotton crop.

The construction of the intercoastal canal is a merely mechanical problem by reason of the facility of excavation, the absence of precipitous falls and heavy currents, the freedom from rocks in soil and stream, and the remarkable manner in which the banks of marsh canals and bayous withstand erosion. This last is due to the vegetation. The growth and filaments weave in and bind the soil, thus preventing sliding and washing, and the moss under the surface of the water acts in the same manner.

Appropriations thus far made for the work by Congress aggregate \$1,388,000,

based on a canal five feet in depth with one foot overdepth, and a bottom width of forty feet, with appropriate side slopes. When completed, it resolves itself into a canal six feet deep and practically seventy feet wide. A later survey recommends a canal seven feet in depth and seventy-five feet wide at bottom, and favors a change in route in Louisiana to one further inland, to avoid the dangers and excessive



ONE OF THE MILLION-BUSHEL ELEVATORS AND SOME OF THE SHIPS WHICH HANDLE GALVESTON'S GRAIN TRADE



- 1 SURF-BATHING IS AN ALL-THE-YEAR-ROUND DELIGHT AT CORPUS CHRISTI.
- 2 A STUDY IN BLACK AND WHITE—NEGRO ROUSTABOUTS AND COTTON BALES ON A RIVER BARGE.
- 3 ELECTRIC BRIDGE ACROSS HARVEY CANAL, 1000 FEET FROM THE LOCK. SHELLS DREDGED FROM LAKE SALVADOR.
- 4 GUSTAV GRAPELLE (AGED 94) AND WIFE (AGED 93), WITH SIXTY MEMBERS OUT OF THEIR FAMILY OF 74.
- 5 THE GIANT CAUSEWAY AT GALVESTON, WHICH CROSSES THE CHANNEL OF THE INTERCOASTAL CANAL.



THE INTERNATIONAL BRIDGE, BETWEEN BROWNSVILLE, TEXAS, AND MATAMORAS, MEXICO
THIS STRUCTURE, LINKING OLD MEXICO WITH HER MIGHTY NORTHERN NEIGHBOR, MARKS THE SOUTHERLY END OF A PROTECTED COASTAL CANAL SYSTEM THAT PROMISES ONE DAY TO EXTEND FROM BOSTON HARBOR TO THE RIO GRANDE

maintenance cost encountered in the rather shoal bays of Vermilion and Cote Blanche. The recommendation of the engineers has been adopted and work is now in progress on that new route.

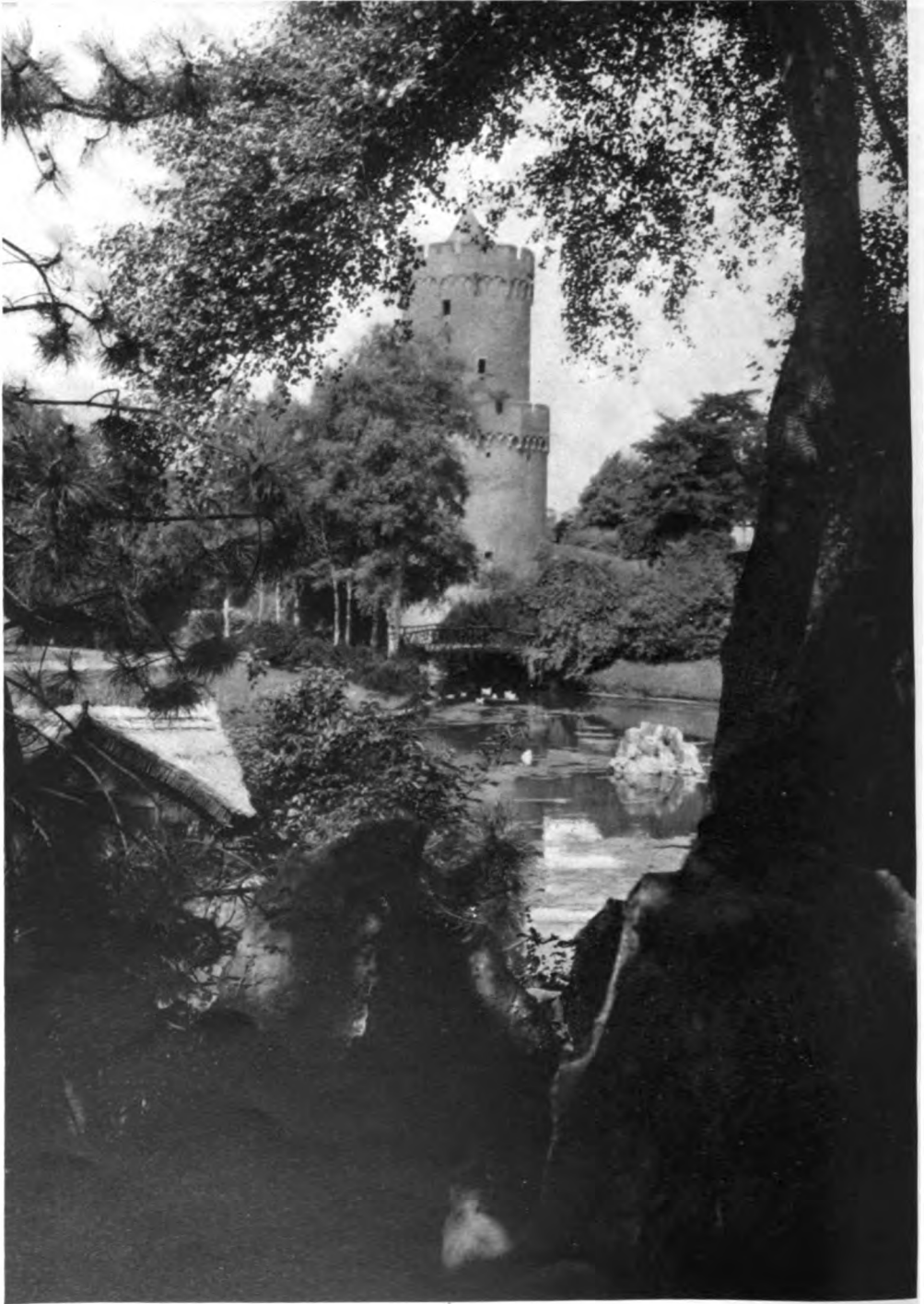
Already the canal is serving a great number of communities through its completed sections and is bringing relief to hitherto remote and almost inaccessible parts of both States, opening vast areas of fertile and productive lands along the coast. The benefits which will follow its completion can only be conjectured, but the annual freight saving will be more than the entire cost of the canal, and the value of the waterway as an agent in

drainage and reclamation is beyond computation. The marsh lands, with their annual enrichment of decaying vegetation—a process that has been going on for hundreds of years—are destined, when drained, to be the most productive lands in America.

Each section of the Intercoastal Canal, whether in Texas or Louisiana, confers sufficient benefits upon the territory served to amply justify its construction, and the completed project will be a part of that great connected system of inland waterways which one day will extend from Montana to Massachusetts and from Lake Superior to the Rio Grande.



AN ATTRACTIVE SPOT IN LOUISIANA AT THE JUNCTION OF THE BIG BARATARIA, LITTLE BARATARIA AND BAYOU VILLERS



THE KRONENBURGERTOREN—NIJMEGEN

ONE OF THE SIXTEEN TOWERS WHICH ONCE DEFENDED THE CITY STILL STANDS AMID A BOWER OF GREEN

THE ELUSIVE DUTCH RHINE

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

*"THERE is not in all the Netherlands that fringing out of dirty streets into dusty roads, that eye-sore of slatternly, ill-kept houses and gardens common to the edges of growing American towns; if in Brabant the dividing line is not always so clean-cut. * * * * it is only by comparison with its sisters that Zalt-Bommel suffers. It may not be so 'netje' as Hoorn, but beside an American village of four thousand inhabitants—No! let us not go farther."*

IN THREE PARTS—PART III

THERE exists today no trace of Maarten Schenk's old fortress where this picturesque soldier of fortune, what time he was not greedily ravaging the country, sat in gleeful surety watching his enemies and collecting rude tolls from every rich vessel passing up or down the Rhine. Bold, clever, unscrupulous in some things, nicely honorable in others, he terrorized the Lowland cities perpetually while fighting alternately and impartially in the service of the States or of Spain. It was not with him, as with them, a question of conscience, but of freedom to fight as he would and to pillage where he could.



to pass the short night there in silence, then—next morning—when officials were hurrying to the city council and townspeople gathering for market there would be a swift fierce attack—the affair would be settled in a moment.

For Schenk and his men the next morning never dawned. They entered, whether by mistake, whether from false information, not a vacant house but one where a wedding was in progress. The town was

not sleeping sweetly, as Schenk supposed, but very wide awake and watching festivities. When Maarten and his men strode into the brilliantly lighted rooms the astonishment upon both sides was equal.

The battle was on in a moment, the intruders were beaten back to their boats. There in the blackness there was much confusion. More than one coward sprang into a boat and saved himself in the darkness, careless of his companions. Other boats were upset in the struggle; others, too heavily loaded, overturned in midstream while several, unwatched, drifted off empty upon the current. Schenk, commanding, imploring, coaxing his men, fought on until left alone upon the bank, then plunged in, meaning to swim the river. Weighted down by his armor he sank to death in an instant.

Like his predecessor in the art of brigandish warfare, Maarten van Rossum, his name, once used by mothers to conjure naughty children into impossible goodness, has since acquired an heroic halo, while at Nijmegen, where he died, not miserably of pestilence (or, perhaps, gluttony) like van Rossum, but bravely fighting against overwhelming odds, it is treated with a respect that approaches reverence.

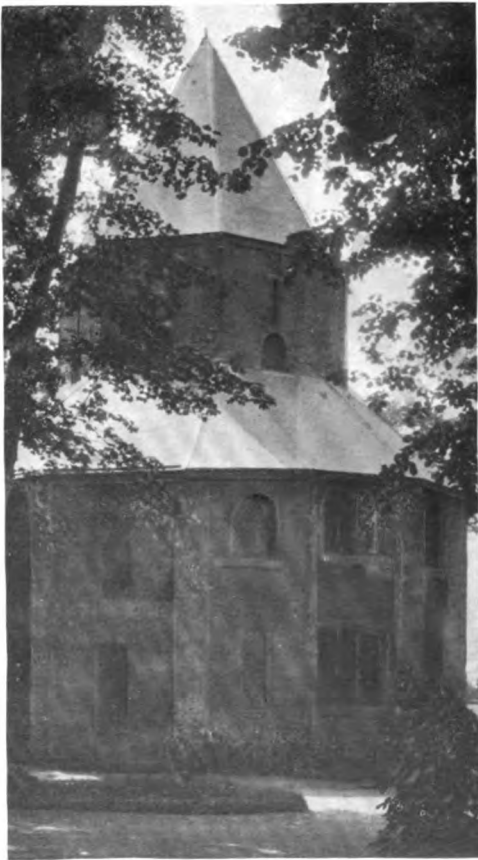
It was on a night in August of 1589, Nijmegen, a rich desirable city, being then in the hands of the Spanish and Maarten Schenk in the service of the States, that twenty-odd boats, filled with stoutly armed men, slipped softly down on the current from Schenkenschans and tied up in the shadow of the town's high wall. Stealthily the water-gate was forced—or opened by a traitor—silently and swiftly the men crept through it and into the lower rear windows of a house whose imposing front rose from the market-place on the hill. Schenk meant

Nijmegen fished up his body and, in petty revenge, quartered it and set his head above a city gate, but later the Spanish commander ordered the bits collected into a chest and placed in a tower where Maurice of Orange found it when, two years later, he took the city. Then Maarten Schenk's hacked body was deposited

with all pomp and state in the tomb of Guelderland's Dukes, and since that day Nijmegen speaks, with a sort of pride, of his deeds and name.

And the tale of Maurice's siege of Nijmegen is not devoid of picturesque incident, but for it one must go to the pages of Motley, where may be found, most delightfully told, "the inevitable fate of talking castles and listening ladies;" for us Nijmegen has other charms than those of war.

The old imperial city sits proudly upon her steep little hills above the Waal (that Rhine branch which we are now to follow to the sea), looking down pensively upon the hurrying water as do the German cities upon the upper Rhine. Not in the least does she suggest a Lowland town. Her walls and towers are gone, save for a few isolated remnants which tell us plainly what we



AN OCTAGONAL CHAPEL AT NIJMEGEN IS SUPPOSED TO HAVE BEEN THE GREAT EMPEROR'S BAPTISTRY



THE VALCKHOF AT NIJMEGEN—A BIT OF ROMAN ARCHWAY ASCRIBED TO BARBAROSSA

have missed by coming to her a half-century too late; charmingly picturesque she is still with her great church of St. Stephen perched so haughtily on the hillside, her broad market-square with its quaint buildings, her gracious *stadhuis*, but she has no least hesitation today in telling you how ornamental was her girdle of ramparts climbing up and down and around her hills nor her ceaseless regret that she pulled them down a foolish generation ago.

She was old enough to know better. Few Rhine towns have a longer history, and none in the Netherlands. Who built here, high above the river, the first citadel? Was it Kelt or Goth or Gaul? None knows, but only that his name was Mage or Magus and a successor rebuilding the stronghold called it Neo, or Noviomagus, whence the town derives its present name. The Dutch pronounce it—Nim—va—gen although it is usually spelled Nijmegen, without "v" or "w."

Julius Caesar came down the Rhine with his legions and Noviomagus became for a



ON THE HIGH GRASSY DIKE SURROUNDING ZALT-BOMMEL A HUGE MILL TURNS WITH ALL THE WINDS

time *Batavorum oppidum*, the city of the Batavians. Roman Batavia was the Germanic *Betau* or *Betuw*, that rich, fertile island enclosed by two Rhine branches, the Waal and the Neder-Rijn, across which Nijmegen looks from her hilltops to Arnhem and Rhenen, whose towers mark the northern stream.

Long after Caesar, another emperor, Charlemagne, saw and loved the little hill town. On a plateau beyond the city which looks far out over the Rhine and the Betuwe's rich fields, he built a palace which he called the Valckhof (or Waelhof), a name which still clings to the few bits of ruin that crown the green bluff.

An octagonal chapel is supposed to have been the great emperor's baptistry; when one recalls his zeal in baptizing the pagans and the character of Nijmegen's neighbors in his time the story seems plausible, although without it the chapel might get a later date than Charlemagne. There is a bit of Roman archway ascribed to Barbarossa, a vine-covered heap of crumbling

masonry here and there, for the rest great trees in which the soft winds whisper perpetually, soft green turf that rests the weary eye, quiet paths where one may sit undisturbed throughout a summer day, listening to the murmur of the river far below or the leaves far above one's head, a pleasant flavor of very ancient things that one but dimly understands.

And, if one likes history thickly coated with romance, here is the very place to tell another tale of Lohengrin, Knight of the Swan. At how many Rhine-ports did this errant lover stop on his journey into operatic fame? From how many princely castles did a fair maid wave him welcome or a sad matron sob adieu! Far be it from me to rob sister-towns of the doubtful honor of his one real authentic visit but—one hears the story several times before reaching Nijmegen, always with the same hero.



JUST BEFORE SCHOOL-TIME IN ZALT-BOMMEL. THE STATELY CHURCH AND BEAUTIFUL TOWER RIVAL ST. KUNERA'S AT RHENEN



THE STORIED CASTLE OF LOEVESTEIN

THE MAAS, WHICH HAS BEEN PARALLELING THE WAAL, ALMOST FROM NIJMEGEN, JOINS IT AT A SHARP POINT WHEREON SITS CASTLE LOEVESTEIN, IMMORTALIZED IN THE "BLACK TULIP"

and a different heroine. I have grave doubts of the Swan Knight. Hear the tale of the Valckhof breezes!

Sweet Bertha, daughter of the castle's lord, walking one day upon this green terrace at our feet, saw and instantly loved this peerless Lohengrin, whose swan had just arrived at the palace water-gate. As the maid was young and beautiful as well as wealthy and amiable, the Knight tarried gladly by her side. The wedding bells rang gaily for them—as gaily as for Elsa probably, although there is no Dutch Wagner to tell us so—the days and years slipped swiftly, happily away, but curiosity still brooded in a woman's heart and Lohengrin kept his swan-boat ever ready upon the castle moat.

One day poor Bertha, older grown, less beautiful possibly, certainly less wise, asked the forbidden question; the white bird sailed away down the river with Lohengrin, Nijmegen saw him no more. Sorrowful Bertha is long since gone to her rest—but swans there are in plenty on ponds beside Nijmegen's towns to witness for her and for their Knight.

But romance and history are not all of Nijmegen. For rainy days there is the little museum in the *Stadhuis*, the *vierschuur* or judgment-hall, almost as lovely as Kam-

pen's own, the great church somewhat disfigured with whitewash, but majestic in its proportions; for sunny weather the busy streets and markets, the hillside walks, the sunny river. On one such day we must go to Berg-en-Dal, a short eighty minutes walk through woods and heather, with lovely glimpses of the shining river and smiling land. On another we will take the *Gierpont*, that queer broken or flying bridge which sidles crab-like between two floats moored on the opposite shores. From Lent we shall have a most perfect view of Nijmegen, her red-roofed houses climbing the hills from her quays to the great church soaring skyward from the summit, all ringed and threaded with greenery where trees and parks enclose her old towers and ever merry with the peal of chiming bells. And one day, sooner or later, we must take that boat which shall carry us down the river, a sad day—for if we leave Arnhem most cheerfully we always go reluctantly from Nijmegen.

Between Nijmegen and Tiel are numbers of tiny villages upon both sides of the river so hidden by huge dikes and trees that one scarcely suspects them. The hills flatten rapidly as one goes westward, heather and forest give place to orchards and meadows, the sky has almost 180 degrees

Tiel is as old as Arnhem, but to Nijmegen a child. Like every other river town it has its bits of war history, its memories of a commercial greatness outrivalling Dordrecht; it has one solitary gate remaining of its ancient fortifications and it holds a great horse-market which we have found vastly entertaining; nevertheless Zalt-Bommel, farther down the river, usually calls us quickly from Tiel.

No one could drift past its tall church tower without question. We saw it first from train windows as we were journeying from Utrecht to Den Bosch. It soared upward from its trees alluringly, but of the town cuddled at its feet there was no visible sign. The railway station was expressionless; a broad sunny road led high like a dike between fields and kitchen gardens toward that oasis of greenery a mile or more away. We followed it once—impelled by curiosity—and discovered Zalt-Bommel, which seemed to have been awaiting discovery for centuries but was unflustered when it came. A far pleasanter way is to float down by boat as we are doing today and land beside the huge waterwall.

Although flat upon a plain beside the river Zalt-Bommel no more than hilly Nijmegen suggests a Holland town, and this is eminently proper, for Zalt-Bommel is of Brabant. There are no intersecting canals, no boats sailing into its market-

places, no shadowy tree-lined waterways. Its streets, fairly clean, lie broadly open to the sun, an arid waste of rough paving stones. Its people are friendly, gracious with the strangers, incurious and easy-going—they answer questions politely, but they ask none.

Under the shadow of the great church you may see barefoot, dirty-faced urchins playing cheerfully; you may even note a torn blouse, a soiled apron, a buttonless frock; here and there are squalid corners, picturesque enough to delight the artist, abhorrent to the hygienist, that are quite foreign to the poorest, smallest Noord-Holland town.

There—in the Hollands or Friesland—one finds no ragged, fraying edges, no dwindling slovenly suburbs. A town ends abruptly at its *Singel*—its water-girdle—the country begins there. Within all is neatness and order, without all is order and neatness; as for the children—one may see a face and fingers betraying a recent *hopje* (caramel) or strawberry, one will see blouses and aprons so patched that the original fabric is in doubt, but there is never a rent visible and always the little feet are shod in thick stockings and *klompen*, the blonde head is sleek and smooth. Still comparisons may prove boomerangs. There is not in all the Netherlands that fringing out of dirty streets into dusty roads, that eye-sore of slatternly, ill-kept houses and gar-

HALF OF Woudrichem's MALE POPULATION WERE LOUNGING PLACIDLY BY THE WALL.



SALMON FISHERS AT Woudrichem—A TOWN THAT NEVER SOLD A PICTURE POSTCARD OR WANTED TO





ON THE WAY FROM DORT TO ROTTERDAM

THE WELL-TRAVELLED NORTHERN ARM SWEEPS ON PAST BOAT-YARDS, FACTORIES, FISHERIES TO ROTTERDAM. THE FREIGHT BARGES CARRY SAIL, AND ON THE CANALS ARE SEEN MANY BARGES PUSHED OR PULLED BY MAN-POWER

dens common to the edges of growing American towns. If in Brabant the dividing line is not always so clean-cut, the tidiness so uniform as farther north, it is only by comparison with its sisters that Zalt-Bommel suffers. It may not be so *netje* as Hoorn, but beside an American village of four thousand inhabitants—No! let us not go farther!

And Zalt-Bommel numbers no more than that today. Was it larger and richer when it built that stately church and beautiful tower? A rival to St. Kunera's at Rhenen, each stands beside a Rhine branch looking at the other across the orchards of the Rich Meadow (*Betuwe*) of Guelderland.

Besides the church there are interesting old houses in Zalt-Bommel. Very ancient houses, dignified, gracious; houses with quaint gables almost frivolous in their airiness, others rich with carvings. One, now a district court, but resembling a prison with its smooth facade and high small windows, was the residence of Maarten van Rossum, and according to Zalt-Bommel he was oftener here than in his "Duivelshuis" at Arnhem. What interesting shadows even a freebooter casts!

A tree-shaded moat and wide promenade replace Zalt-Bommel's old walls. Here, or upon the quay watching the boat-dotted river, one could linger cheerfully, but now the Waal begins to feel the thrust of the sea, the tides recall us to our task. Nevertheless this Rhine branch flows yet many a mile, dividing and sub-dividing, uniting

again to divide until one is distraught: only for the pretty towns one meets upon the way, one would give up the puzzle.

The Maas, which has been paralleling the Waal almost from Nijmegen, joins it at a sharp point whereon sits Castle Loevestein. There Grotius, "the wonder-child of Drecht," was imprisoned; thence, through his wife's clever ruse, he escaped in a chest. But thousands who never heard of Hugo de Groot know this castle well. Is it not immortalized in the "Black Tulip," stamped rightly or wrongly with the name of Dumas?

Of which prisoner do we think longest as we float past the old fortress, the scholar, world-famous in science, law and learning, or Cornelis van Baerle, anxiously coaxing his wonderful flower? On which woman do we dwell, brave Marie van Reygerbergh, watching with heavy heart from the castle window a little boat storm-swept upon the turbulent river, or Rosa, hastening to Haarlem on the trail of the precious bloom? The Rhine will not tell—nor we.

Just across the river from Loevestein lies Woudrichem, a little, old, walled town of Brabant, which must be Dornroschen's own. No Prince Charming has yet come to kiss her. Nothing she knows of progress or ambition, of modern life and habit; peacefully she slumbers behind her stout walls, lulled by her rushing waters just as she did five centuries ago. Fancy, if you can, a town which never sold a picture postal card, nor wanted to, and you may be able to comprehend Woudrichem. For all



THE GROOTEKERK AT DORDRECHT WATCHING THE GREAT BOATS IN HER HAVENS
THERE IS ALWAYS THE JUMBLE OF MASTS, RED SAILS, GREEN TREES AND GLEAMING SCARLET ROOFS



GORINCHEM IS AN ATTRACTIVE LITTLE CITY SITTING PEACEFULLY AMONG THREATENING WATERS, PROTECTED FROM FLOOD BY HEAVY WATER-WALLS AND HUGE MILLS

her shortcomings as regards such necessities as that she is a delightful small town of a summer day.

Once she was an important stronghold defending the two great rivers that meet before her. In her old harbor gate, grim, unlovely, but stout to this day, are imbedded the huge stone cannon-balls in common use five centuries ago, a proof of her services. Her walls still encircle her, you may walk their entire circumference in a half-hour with "stops to look" by the way, yet the town has ample space for its needs within them. Only the church seems crowded. It is so big, so bulky, it stretches high above roofs and walls for space. Its tower, fearfully out of line, is nevertheless a sturdy landmark as boats sweep down the Maas or Waal. The usual assortment of stories clings to its old stones, the same stories that we have heard at Kampen and many another Rhine town; we will not repeat them here.

There is work for the archaeologist, if not the romancer, in Woudrichem. The

town boasts no *Vereeniging tot Bevordering van Vreemdelingen Verkeer*, that society of sesquipedalian name which welcomes strangers, sets up signs, issues guide-books in every province—except Brabant. There is in Woudrichem no one to tell you who built the little old houses or how, or why, or when. In the old gable stones, among the quaint carvings are many curious inscriptions; let this one suffice:

Die tidt is cort die
Dood is snel. Wacht
ie van sonden so
Doet ghij vel. 1608.
(The time is short the
Death is swift. Watch
you from sins so
do ye well. 1608.)

Between wall and river is a narrow strip of beach where the salmon-fishers land their odd iron boats, mend nets and sails, scrub, paint or idly smoke upon days when they must give their German neighbors on the upper river a chance at the fish. An Urk boat lay at Woudrichem the day we were there. What were Zuider Zee fishermen doing on the river? And how did they come there, around the North Sea, or through the Ijssel? They and the Brabant fishermen made a curious contrast in appearance and in language; the dialect each spoke was a joke to the other and each claimed that he alone spoke pure "Hollandsche." In the midst of the chatter our own boat came and we were obliged to go on to Gorinchem, leaving the questions all unsolved.

Gorinchem, just across the river and in Holland, is far better known than its neighbor. Artists have loved its sunny meadows and great waterways, archaeologists its church and gables, historians its tales of bravery. Protected by its heavy water-walls and huge-armed mills, the little city sits securely today among its ever-threatening waters, clean, dainty, smiling, delightful in all but its name. That my tongue cannot master. The Dutch "g" is usually an "h" in sound and many travelers contend that this is "Horkum," but in three summers I have never heard a native call it thus but always "Horinchem," three distinct syllables of which first and third begin with a strongly aspirated "h."

Except for this the small place is considerate of strangers and patient with their whims. She carries the Holland fancy for restoration a thought too far; the Hugo de

Groot *poortje* (sometimes known as the Poortje van Daetselaer), the little gate leading to Daetselaer's house through which de Groot was carried in his chest to safety, has been "restored" beyond recognition. Over in Woudrichem it would have been allowed to grow old peacefully, to look its centuries, but here it has been smoothed,

to a network of waterways which find at least three roads to the sea.

Who does not know Dordrecht, Dordrecht the Beautiful, Dordrecht the Hospitable, she whom her friends call "dear old Dort"? She has the Holland mania for painting and white-washing, she is a thought too swift in tearing down and every year marks a great change. We feel a bit grieved that some dear smiling cherubs on a well-remembered gateway have been given a coat of paint so thick that they have lost their dimples in it, while a pair of cheerful lions have been re-carved to unpleasant sharpness. Still this sort of thing happens continually all over Holland and must be accepted. So long as Dort has her massive church tower watching the great boats in her *havens*, the jumble of masts, red sails, green trees beside her quays, her gleaming scarlet roofs and imposing Hoofdpoort, her swift-flowing



A CORNER IN EGGS AT THE DORT MARKET. ON MARKET MORNINGS THE STEAMERS UNLOAD A VERY MIXED CARGO JUST INSIDE GROOT-HOYD POORT

polished, rubbed, re-pointed, re-carved, re-everythinged until it looks as though built yesterday. It is not beautiful. Its sole charm is its age and its story, but Gorinchem won't believe that and like a vain woman who rubs away character lines, she too paints out all vestiges of age where she can and is very patient with you but very sorry for you that you do not do the same.

There are other archways and beyond them alluring little *hofjes*, a bit of red-tiled roof, a tree, the glint of sunshine or a gray wall. There is an old, old church with, of course, a tall crooked tower that looks as if it should fall but does not, and rows of small quaint houses along gently curving streets. Here beside Gorinchem the Linge comes in to join the Maas and Waal, which are now the Merwede, and the flood slips down through the Biesbosch and around about Dordrecht, dividing and uniting in-



THE TOWER OF GORINCHEM'S CHURCH. "THE TILT IS A LITTLE APPALLING TO PEOPLE NOT USED TO LEANING TOWERS"

river and her ever-changing skies, she will be lovely and lovable. For fear of saying too much one must say perhaps too little and, leaving nine-tenths of her charms untold, go on with the river.

At Dordrecht it forks once more, an arm bends to the south, branches and sends a



IN ALBRECHTSKOEK—DELFTSHAVEN

FREIGHT BARGES WAITING FOR THE LOCK TO FILL IN ORDER TO PASS INTO THE CANAL TO REACH THE INTERIOR FROM ROTTERDAM. THE LARGER BOATS LIE THREE DEEP AGAINST THE QUAY WALL, WHILE OTHERS TIE UP TO MOORING BUOYS OR POSTS IN THE MAAS AND THERE DISCHARGE DIRECTLY INTO THESE BARGES THEIR INWARD-BOUND CARGOES

stream, De oude Maas, past Putten and Brielle, to the sea. For the sake of Maarten Harpertszoon Tromp, he who nailed a broom to the masthead in token that he had swept the seas, and whose birthplace it was, for its many jokes, its legends of the Water-Beggars we would gladly go to Brielle, but it may not be today. Nor, much as we should like to do so, can we take to the Hollandsch-diep and slip between the islands of South Holland and Zeeland, past Hellevoetsluis, Holland's port and fortress, and by the Haringvliet to the North Sea, yet that way must go some of the Rhine. A few drops might even trickle about the Zeeland islands and mingling with the Scheldt waters, aid in the battle of the tides, but in that direction we may not turn our eyes. It is a summer's voyage to visit all the charming towns which perch there precariously between river and sea.

Let us rather take the conventional route, the well-travelled northern arm of the Merwede, de Noord, which sweeps on past boat-yards, factories, fisheries to Rot-

terdam. How did Kinderdijk get its name? In the St. Elizabeth flood (November 18, 1421), when Dordrecht became an island and seventy-five villages went down beneath the rivers where now the Biesbosch waves its reeds and rushes today, a child, sweetly sleeping in its cradle, drifted here to land and gave the new village a name. Our less romantic boatman says it is because the dike is here so small, a veritable child of a dike compared with its neighbors. There is no question which story I like best. And Slikkerveer? *Veer* is a ferry and *slikken* are mudflats formed by the ooze of rivers—Mudflat-Ferry and Slikkerveer! What glamour is lent by unfamiliar sounds. A Spanish linguist has affirmed that "cellardoor" is the most musical combination of sounds possible in any known language, but do we appreciate it?

Rotterdam, I confess, sounds unlovely and Rotte is not a pretty name for a tiny river, yet in spite of names, I confess to a fondness for the town. I have seen St. Lawrence's purple-red tower dusky against



THE STEIGER—ROTTERDAM

A BIT OF HOLLAND THAT MIGHT EASILY BE VENICE. YET IN THE HEART OF THE CITY THE COOLVEST WINDMILL TURNS AND TURNS, GRINDING FAITHFULLY DAY IN AND DAY OUT, AND IS AS STATELY AS ANY IN THE NETHERLANDS

a sunset sky when I thought it the loveliest in Holland; as for the Coolvest windmill—is there a statelier in the Netherlands?

But the river, which has again become the Maas, needs no description. Did not our Pilgrim Fathers long ago sail down it from little Delftshaven, now a flourishing suburb of Rotterdam, and do not their descendants in ever-increasing hundreds steam up it each summer on their way to "do Europe?" Is it Rhine water which rolls by Rotterdam *Boompjes* to the Hoek of Holland and the sea? Some portion must be.

No great appropriate seagate has the mighty river but, fringed out into a great delta whose arms deny their parentage, the one branch that bears the name declared a step-child unworthy the right, tamed by canal-walls and locks, divided, turned and twisted, it finally dribbles under many aliases into oblivion.



TOWING BY MAN-POWER, JUST OUTSIDE OF ROTTERDAM



PICCADILLY CIRCUS, LONDON—A BUSY SCENE THAT IS CHARACTERISTIC OF THE WORLD'S METROPOLIS. IT IS THE HEART OF THE THEATER AND SHOPPING DISTRICT AND TEEMS WITH TRAFFIC ALIKE BY DAY AND BY NIGHT

THE CITY OF WINNIPEG, IN GOOD PART PEOPLED BY AMERICAN IMMIGRANTS, IS THE CAPITAL OF THE CANADIAN PROVINCE OF MANITOBA AND THE CENTER OF THE VAST WHEAT TERRITORY OF THE DOMINION—THE PICTURE SHOWS MAIN STREET, SEEN FROM THE CITY HALL



Photos by Underwood & Underwood

SYDNEY, NEW SOUTH WALES, THE GREAT AUSTRALIAN SEAPORT, REFLECTS THE CIVILIZATION AND CULTURE OF THE ENGLISH AND SCOTCH, WHENCE HER POPULATION OF HALF A MILLION IS LARGELY DERIVED—BRIDGE STREET, HERE PICTURED, IS ONE OF THE PRINCIPAL THOROUGHFARES

THE ETERNAL MYSTERY OF THE EAST AND THE FRANK COMMERCIALISM OF THE WEST ARE PICTURESQUELY CONTRASTED ON THE CROWDED QUAYS AT HONG KONG, FIRST OF CHINA'S PORT CITIES



CAPITALS AND SEAPORTS OF FOUR CONTINENTS TO BE LINKED BY A SINGLE TRANSPORTATION SYSTEM UNDER THE UNION JACK

THE IMPERIAL ALL-RED ROUTE

By HARRY CHAPIN PLUMMER

“ALTHOUGH planned mainly as a new line of communication between the capital of Britain and far-away New Zealand and Australia—a line to be as dependable and as valuable in time of war as in time of peace—the ‘All-Red Route’ is designed to enter actively into competition for service to less distant points, as well. From London to Winnipeg in five days is as important an object relatively as the accomplishment of a 21-day schedule between London and Sydney.”

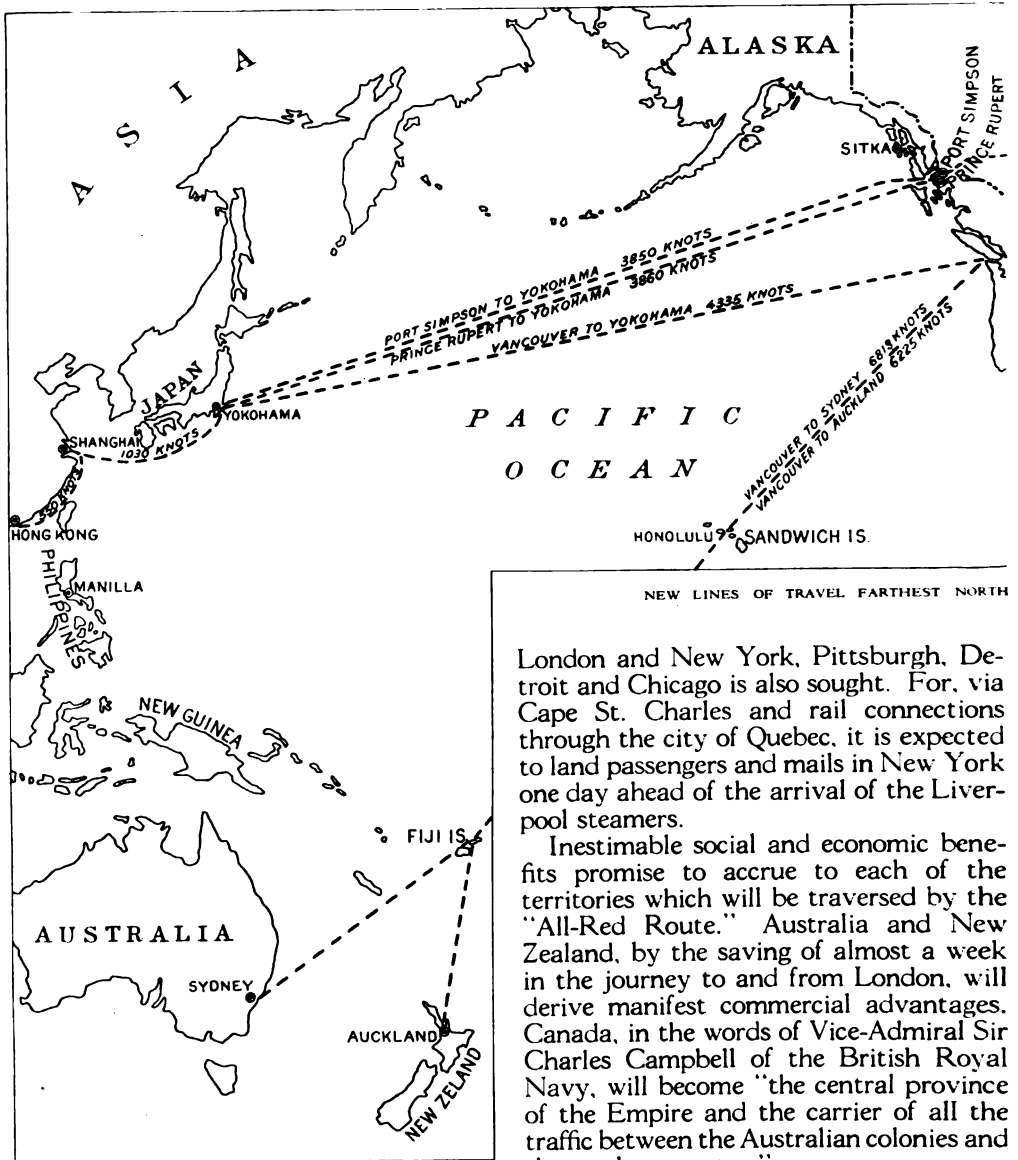
VAULTING in grandeur of conception and colossal in boldness of execution is a globe-girdling railway and steamship system, styled the “Imperial All-Red Route,” which is designed to link the farthest separated dominions of the British Empire. This great highway through England, Scotland and Ireland, across the Atlantic to Labrador, across British North America over the most northerly parallels of latitude yet followed by trunk line railways, and, diversely, across the Pacific to distant Yokohama, Hong Kong and Shanghai and to yet more distant Auckland and Sydney, is planned to serve the purposes of war as well as the pursuits of peace. It will be backed by the might and the combined resources of the United Kingdom, Canada, New Zealand and Australia.

In the flight over tremendous distances, by the swiftest means of land and sea transportation that twentieth century engineering skill can devise, the traveler will be borne from the zenith of modern civilization through lands replete in associations with the very dawn of humanity, across seas to virgin forest stretches scarce trod by the white man, and again across seas to states and great empires striving for civilization's ideal.

From London to the Scottish border and thence to the port town of Stranrear, from Stranrear by car-ferry 21 miles across the North Channel to the town of Larne, in Ireland, and from Larne westward across the Emerald Isle to the magnificent new harbor of Blacksod, on the western coast of the County Mayo, Australia-bound passengers will proceed for 551 miles by swift-moving express trains. From Blacksod, steamships of a speed capacity of 26 knots per hour, having finer lines and smaller displacement than the

Mauretania, will run in three days to Cape St. Charles, on the bleak, rock-bound coast of Labrador, just north of Belle Isle Strait and but 1618 nautical miles westward from Blacksod. From this northernmost Atlantic harbor on the Western Hemisphere, limited trains will race westward, almost by air-line, to Winnipeg, landing their passengers in the Manitoba metropolis in little more than four and one-half days from Blacksod.

From Winnipeg, or from the longitude of Winnipeg, onward to the Pacific Coast, the choice of three routes is open to the promoters of the great enterprise, among whom are the leaders of state and church and finance throughout the Empire. The first of these routes, of course, is the long-established Canadian Pacific Railway to Vancouver and Victoria, B. C. The second is the national transcontinental Grand Trunk Pacific Railway, now in course of rapid construction from Moncton, N. B., the Atlantic terminus, to Prince Rupert, B. C., the tidewater outlet on the Pacific. But 488 miles of the total distance of 1,745 miles from Winnipeg to Prince Rupert now remain to be completed, the track having been laid for 1,257 miles and this latter mileage being now in operation. The third route under consideration is the projected Hudson Bay & Pacific Railway, to extend from Fort Churchill, on the western shore of Hudson's Bay, to Port Simpson, B. C., which is but a few miles north of Prince Rupert. A spur of a few hundred miles in length, from a point on the Labrador-Winnipeg Railway, eastward of Winnipeg to a junction with the Hudson Bay & Pacific Railway, would provide a through transcontinental route to compete with the great railways already in operation or in course of construction.

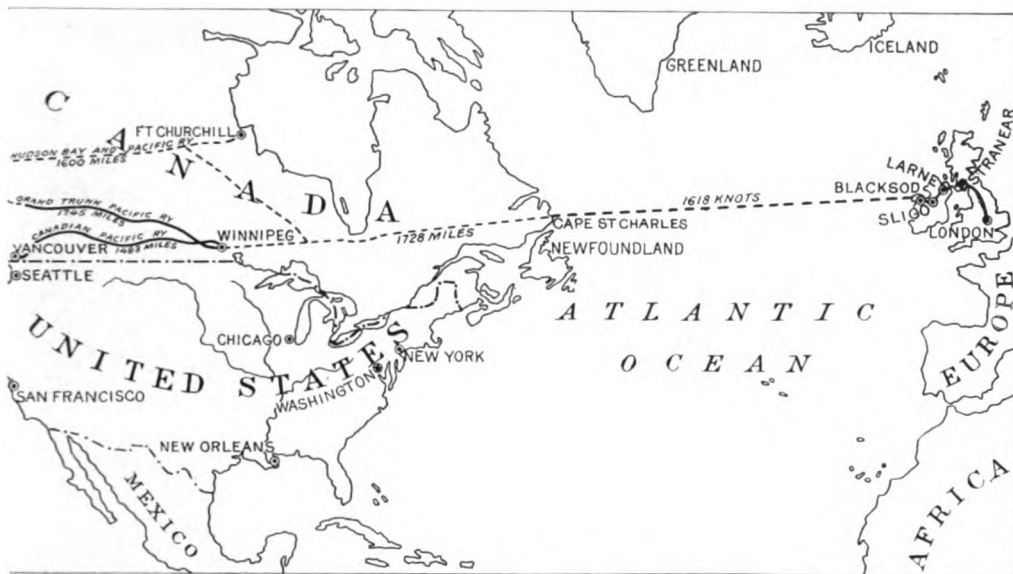


Although planned mainly as a new line of communication between the capital of Britain and far-away New Zealand and Australia—a line to be as dependable and as valuable in time of war as in time of peace—the "All-Red Route" is designed to enter actively into competition for service to less distant points, as well. From London to Winnipeg in five days is as important an object relatively as the accomplishment of a 21-day schedule between London and Sydney. A radical lessening of the running time between

London and New York, Pittsburgh, Detroit and Chicago is also sought. For, via Cape St. Charles and rail connections through the city of Quebec, it is expected to land passengers and mails in New York one day ahead of the arrival of the Liverpool steamers.

Inestimable social and economic benefits promise to accrue to each of the territories which will be traversed by the "All-Red Route." Australia and New Zealand, by the saving of almost a week in the journey to and from London, will derive manifest commercial advantages. Canada, in the words of Vice-Admiral Sir Charles Campbell of the British Royal Navy, will become "the central province of the Empire and the carrier of all the traffic between the Australian colonies and the mother country."

Proportionately, however, Ireland must come to enjoy yet greater advantages. For the making of the erstwhile lonely and isolated Blacksod Bay the Atlantic terminus of the railway line from London must bring about the concentration at that point of the multitude of interests sure to follow the sudden diversion thither of a traffic universal in its scope and gigantic in volume. Grain elevators, coal and oil storage, warehouses and all the equipment of a great harbor terminus, whereto a vigorous and spreading popu-



ACROSS THE AMERICAN CONTINENT TO BE OPENED UP BY THE "ALL-RED ROUTE," FROM BRITAIN TO THE ANTIPODES

lation is sure to be attracted, will place Blacksod well in the race for maritime supremacy among the port cities of the British Isles. The effect upon the industrial position of the North Irish country, of which Blacksod will be the logical gateway, is obvious.

The establishment of a first-class seaport so far north on the Atlantic coast of Ireland as Blacksod would not only afford greater security to the United Kingdom as a nation, but would better insure the entry into the country, under stress of war, of provisions for which the British Isles are quite dependent upon the outside world. No less distinguished an authority than the afore-mentioned Vice-Admiral Sir Charles Campbell has thus voiced the position of the Admiralty of Great Britain in respect to the making of Blacksod a port of arrival for the "All-Red Route."

"In the undesirable, but not impossible, event of war between Great Britain and two or more European powers, the position of Blacksod Bay would force the enemy's cruisers, should they attempt to prey upon the vessels using it, to run the gauntlet of the English Channel and near Atlantic and operate on a prohibitive and almost impossible radius, with absolutely no recuperative base.

"Any national expenditure necessary to

insure the success of this enterprise would be repaid a hundred-fold by the saving effected in cruiser protection and the feeling of security which would result from the continuation of the Canadian wheat supply by the shortest possible route.

Although a well-known fact, it has never been brought home to the inhabitants of our islands how absolutely dependent we are on importation for our food supply, and it is hardly realized that, situated as we are, with a decreasing proportionate command of the sea, a week with supplies cut off would badly pinch even the wealthy portion of the community, and a month would certainly bring about starvation followed by anarchy!"

In like vein, Admiral Sir Cyprian Bridge has discussed the question of food supply in the event of hostilities, and the utilization of Blacksod Bay, with its unique natural strategic advantages, as a port of entry for such supplies:

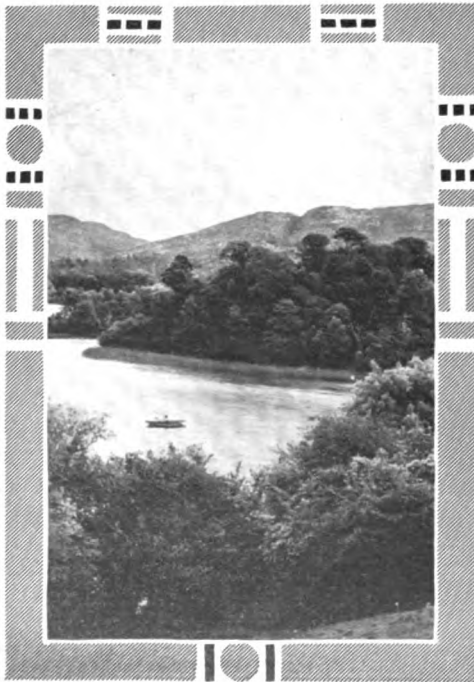
The route can also be utilized for the conveyance of that which comes next in importance to food—the raw material for our great manufacturing industries.

"So far as possible, a line of communication should always be chosen where it is more difficult for an enemy to interrupt it than for the other side to defend it. The Blacksod Bay route meets this condition."



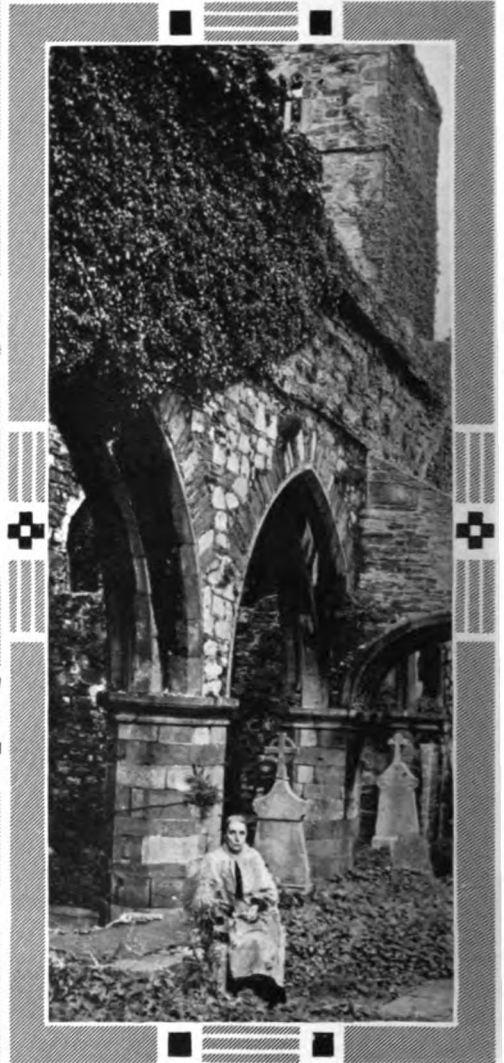
Slater, Ballina

THE MOST REVEREND JAMES NAUGHTON, D. D.
BISHOP OF KILLALA



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A GEMPISE OF BEAUTIFUL LOUGH GILL



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IN THE SHADOW OF THE DOMINICAN ABBEY, NEAR
SLIGO, FOUNDED IN 1252 BY LORD JUSTICE
MAURICE FITZGERALD—ONE OF THE
FINEST SPECIMENS OF MONASTIC
RUINS IN IRELAND



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SLIGO, AN IMPORTANT SEAPORT TOWN ON THE IRISH COAST, WILL BE THE FIRST TO BENEFIT INDUSTRIALLY BY THE OPENING TO THE WORLD'S COMMERCE OF BLACKSOD BAY



Lafayette, Dublin

THE MOST REVEREND PATRICK FINEGAN, D. D.,
LORD BISHOP OF KILMORE



THE SEAWARD OUTLOOK FROM THE CLIFFS AT GLENLOSSEN, BELDERRY, COUNTY MAYO, IS TYPICAL OF THE PICTURESQUE IRISH COAST



Dyey, Ottawa
HON. N. A. BELCOURT, K. C.
Senator from Ontario



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SIR THOMAS H. C. TROUBRIDGE,
BART.
Originator of the Project



Witham & Braintree, East Maldon
SIR J. FORTESCUE FLANNERY,
BART.
Member in Parliament from Essex

The Parliaments of Great Britain, Canada and Australia are cooperating to shape the great project for a line of communication which will shorten both the time and the distance between the Old World and the Far East and the Antipodes. Encouraged by the success which has attended the work of construction on the new National Transcontinental Railway, plans have been prepared for building another road across the lake-dotted, heavily forested plateaux of the Laurentian highlands on a line still farther to the north. Before the close of the present session of the Canadian body, Senator N. A. Belcourt, of Ontario, will introduce, on behalf of F. A. Knapp, of Prescott, Ontario, and a group of associated capitalists of the Dominion and Great Britain, a bill for the chartering of the new "All-Red Route" Railway, as a state-subsidized mail line from Cape St. Charles to Winnipeg.

In England, Sir Thomas H. C. Troubridge, of London, and a committee of leading financiers of the British metropolis have let contracts for the commencement of construction work upon the line of railway which is to connect Blacksod with the routes of the Irish railway system terminating at Larne, and this under promise of a grant of \$135,000 from the Imperial Parliament. The "All-Red Steam-

ship Company," originally planned to operate between Blacksod and Halifax, was incorporated under federal charter by the Dominion Parliament in 1907, and this corporation, of which F. A. Knapp is the president, will operate the steamship service between the Irish port and Cape St. Charles. The trans-Pacific service, employing 20-knot liners, will be operated by an English holding syndicate incorporated in London.

The portal to a very wonderland of romance and mystic tradition is the harbor of Blacksod. Great cliffs, surmounted by crumbling castles and abbeys so old, moss-grown and ivy-wreathed that they seem one with the frowning coast, hurl back the waters of the "western sea," as the Atlantic is known to the maritime nations of Europe, and apparently defy the approach of the staunchest and stoutest craft. But between rugged Mullet Head and the precipitous angles of Achill Island a deep and safe channel leads to one of the grandest harbors in the world.

It is in sighting Achill Island that the first glimpse is had of the remains of the morning years of Old Erin. The progress of the voyage to dock and of the journey thence across Ireland's northern vales to Larne, on "St. Patrick's (the North) Channel," describes a fleeting communion

with a remotest age of human life and activity. Almost within range of the spray and spume of the Atlantic and within the call of its never-ceasing roar, the first of the mutely eloquent circles of stones and giant cromlechs greets the eye of the beholder from the New World.

Contemplation of these strange monuments of dead races takes from one's thoughts all sense of the security, the convenience and the luxury of modern trans-Atlantic travel, banishes for the moment all anticipation of the delights of Ireland of to-day. It is a sobering, an intensely spiritual, influence, this first sight of the time-enduring boulders brought to and placed in their marvelously beautiful settings of land and sea and sky 10,000 years or more ago!

At Achill, at Slievemore, at Sligo, at Cavancarragh, at Carrowmore, and all along the route eastward from the "western sea," these silent witnesses of the history of the Emerald Isle bespeak the message of Eternity, while at Enniskillen, on the grass-carpeted slopes of the Upper Erne Lake, there stands a circle of massive stones within which the famed ring of Stonehenge, of which England justly boasts, might be set and yet provide a goodly space between it and its enclosing Irish circle.

Vast depressed areas of the country to be crossed on the swift rail-journey from Blacksod to Larne will reveal the peat bogs for which Ireland is famous, and which provide the staple fuel of the peasantry. Even more valuable as a chronometer than as a fuel are these deposits of peat, which, as is well known, are coal in the process of formation. For by this substance, which, about Enniskillen and Carrowmore, reaches a depth of 12 feet and represents the accumulation of 800 layers, taking one year each to form, the age of the strange megalithic remains, the cromlechs and stone circles, is determined—or partially determined.

Indeed, while it has been ascertained to the satisfaction of science that a hundred centuries have elapsed since first the peat deposits began above the clayey soil whereon an earliest Irish race builded its monuments, the interval which may have passed between the placing of the cromlechs and the beginning of the peat deposits remains a secret of the ages. This

much geologists have divined—that a milder, softer clime and a wealthier vegetation and foliage than even the verdant isle of our day boasts encouraged the labors of the many hundreds, perhaps thousands, of builders needed to thus record in stone an era that otherwise were blotted from the ken of man. And petrified and blackened stumps of mighty oaks, from which the Irish now shape crucifixes and boxes rivaling in artistic beauty the



Underwood & Underwood

ONE OF THE CROMLECHS, OR RUDE STONE MONUMENTS, THAT ABOUND IN IRELAND AND THAT BEAR MUTE, BUT ELOQUENT, TESTIMONY TO THE DEEPLY SPIRITUAL NATURE OF THE ANCIENT RACE OF FORMORIAN. IT HAS BEEN DEFINITELY ASCERTAINED BY ARCHEOLOGISTS AND SCIENTISTS THAT THESE MEGALITHIC REMAINS ARE AT LEAST 10,000 YEARS OLD

ebony caskets of Eastern carvers, tell of splendid forests that once rose where the peat now covers the land.

"Ireland, Historic and Picturesque," is the title of a descriptive work by Charles Johnston, an Irish writer who is renowned alike for his knowledge of the Gaelic tongue and Gaelic traditions and his mastery of Sanskrit. Poignantly sympathetic with the ideals of his people and deeply imbued with the lesson of religion, in the broadest sense of the term, that the career of the Irish race exemplifies, the

author dwells with a scholar's appreciation and a patriot's ardor upon the beautiful symbolism of the massive megalithic stones that stud the green sward of hillside and dale along the projected route between Blacksod and Larne:

"There are circles of huge boulders ranged at equal distances, firmly set upright in the earth. They loom vast, like beads of a giant necklace on the velvet grass. There are cromlechs set alone—a single huge boulder borne aloft in the air on three others of hardly less weight. There are cromlechs set in the midst of titanic circles of stone, with lesser boulders guarding the cromlechs closer at hand. There are circles beside circles rising in their grayness, with the grass and heather carpeting their aisles. There they rest in silence, with the mountain as their companion, and beyond the mountain, the ever-murmuring sea. * * * * Their magnitude, their ordered ranks, their universal presence, are a startling revelation of the material powers of the men of that remote age; they are a testimony, not less wonderful, of the moral force which dedicated so much power to ideal ends. * * * * They have everywhere the same aspect of august mystery, the same brooding presence, like sentinels of another world. It is impossible not to feel their overshadowing majesty. * * *

"The cromlechs which have been excavated in many cases are found to contain the funeral urns of a people who buried their dead. It does not follow that their first and only use was as tombs; but if we think of them as tombs only, we must the more marvel at the faith of the

builders, of their firm belief in the reality and overwhelming import of the other world which we enter at death. For of dwellings for the living, of fortresses, of storehouses, of defences against the foes who later invaded them, we find few traces; nothing at all to compare with their massive mausoleums. The other world, for them, was a far weightier concern than this, and to the purposes of that world, as they conceived it, all their energies were directed. * * * * The solemn masses and simple grandeur of the cromlechs fitly symbolize the mood of reverence in which they drew near to the sublime world of the hidden: the awe with which their handiwork affirmed how greatly that world outweighs this. * * *

"Thus they have kept their watch through long dark ages. When sunrise reddens them, their shadows stretch westward in bars of darkness over the burnished grass. From morning to midday the shadows shrink, ever hiding from the sun: an army of wraiths, sprite-like able to grow gigantic or draw together into mere blots of darkness. When day declines, the shadows come forth again, joining ghostly hands from stone to stone, from circle to circle, under the sunset sky, and merging at last into the universal realm of night. Thus they weave their web, inexorable as Tireless Time."

So the "All-Red Route" will not only span the mighty spaces which separate the heart of Britain from her far-flung colonies, but link the prehistoric past with the living present and constitute a powerful factor in the future growth of the British Empire.



BLACKSOD HARBOR, ON THE WEST COAST OF COUNTY MAYO, IRELAND

PORT ST. JOE—A FLORIDA HARBOR

By L. H. DIMMITT

"IT is a fact that during the last few months the private cars of the highest officials of the principal railroads in the country have been nosing their way into the various ports along the Gulf, and you are just as apt to see them on the shores of some obscure, unheralded harbor as in the yards of our more developed gateways." Another indication, Mr. Dimmitt points out, of the converging of the great transportation interests of the country to—Panama.

HAVE you recently had occasion to visit the offices of the great railway magnates of the country? Have you realized that, no matter what letters of introduction you carried, you could not see Mr. So-and-so because he was either "out of the city" or "in conference with some of the other officials?" Have you wondered why railroad officials are so unusually busy this year?



along the Gulf, and you are just as apt to see them on the shores of some obscure, unheralded harbor as in the yards of our more developed gateways.

With the Panama Canal nearing completion, the big financial interests of the country are suddenly awakening to the vital importance of obtaining a foothold in the gateways of the South. Quiet and searching investigations of the merits and facilities of the dif-

The answer is—"Panama!"

If you were to make a trip from Key West, Florida, to Brownsville, Texas, at the present time, visiting all the ports along the Gulf Coast, you possibly might not notice anything unusual, except a great building activity and a general air of prosperity, but, if you were a close observer, you might note wherever you stopped a certain air of repressed excitement, a certain tenseness presaging big things about to happen.

You might notice there was generally a private car hooked on to your train just before leaving each port, and, if you made inquiry, you might find the car contained Henry Miller and a number of New York bankers, or Mr. Winchell and a party. This might not be especially significant to you until you picked up the paper next morning and saw the news heralded that the Wabash was seeking an entrance into New Orleans or the Frisco into Pensacola.

There probably would be no truth in that particular rumor. Nevertheless, it is a fact that during the past few months the private cars of the highest officials of the principal railroads in the country have been nosing their way into the various ports

ferent harbors are being made. Millions of dollars are being expended in the enlargement of facilities and the development of new harbors to take care of the vast tonnage which the Gulf ports will be called upon to handle. The East-and-West trunk lines, which now haul the products of the great Central West to the South Atlantic seaboard for despatch to coastwise and foreign points by sea, realize that they must have a Gulf outlet in order to compete with other carriers, especially in view of the business that will move through the canal.

An instance of a railroad and seaport made possible by the Panama Canal is that of the Apalachicola Northern Railroad and the new harbor of Port St. Joe, on St. Joseph Bay, on the west coast of Florida. St. Joseph Bay is of peculiar formation, a peninsula of high sandhills extending from the mainland entirely around the bay to its outlet and making a natural land-locked harbor. The fact that its outlet faces north renders the harbor immune from West Indian hurricanes. Another remarkable feature is the fact that no streams or rivers flow into this bay; consequently no sand bars ever form and there is no shifting of

the channel, as invariably occurs at the mouths of active streams.

Through the joint action of the United States Government and those interested in the development of the harbor \$50,000 is available for dredging the channel. This amount is expected to give a depth of about 27 feet and is probably the smallest appropriation ever made to give this depth of water over a basin six miles wide and twelve miles long.

neers engaged to build the road were, at first, baffled by the seemingly insurmountable problem of crossing three rivers within a distance of four miles. This was finally accomplished by building a trestle six miles long, with three steel bridges, at a cost of \$300,000. With the completion of the railroad, wharves and docks were built at Port St. Joe after the most approved engineering designs and of a capacity estimated to be amply sufficient for several years.



WHERE LAND AND SEA ROUTES MEET

WHARVES AND DOCKS, WHICH IT WAS THOUGHT WOULD BE AMPLY SUFFICIENT FOR SEVERAL YEARS, HAVE ALREADY BEEN OUTGROWN. A COMPANY HAS BEEN FORMED WITH \$1,000,000 CAPITAL TO PROVIDE AN ELABORATE SYSTEM OF DOCKS AND TERMINALS FOR PORT ST. JOE

Except for fishing smacks and Government boats which have found it a safe haven in a storm, this bay, which is developing one of America's great opportunities, has for centuries lain dormant and untouched by the hand of man. For one hundred miles northward from St. Joseph there stretched an unbroken wilderness of virgin pine forest. A group of St. Louis financiers conceived the idea of building a railroad through this trackless region from St. Joseph Bay to River Junction, Florida, connecting at that point with the Atlantic Coast Line, the Louisville & Nashville and the Seaboard Air Line Railways. Engi-

The engineers, however, did not anticipate the rapidity of the development which would come with the opening of so rich a primeval territory. Homeseekers have poured in; sawmills have opened up all along the line; turpentine operators have started extensive work; tobacco plantations have been created; a \$250,000 sugar cane mill and plantation is already in operation; oyster packeries have been established and ice plants have followed. A cotton compress was hurriedly built because it was needed. In fact, this new port, scarcely more than a year old, holds an enviable shipping record, having loaded more



A HEADER INTO THE GULF

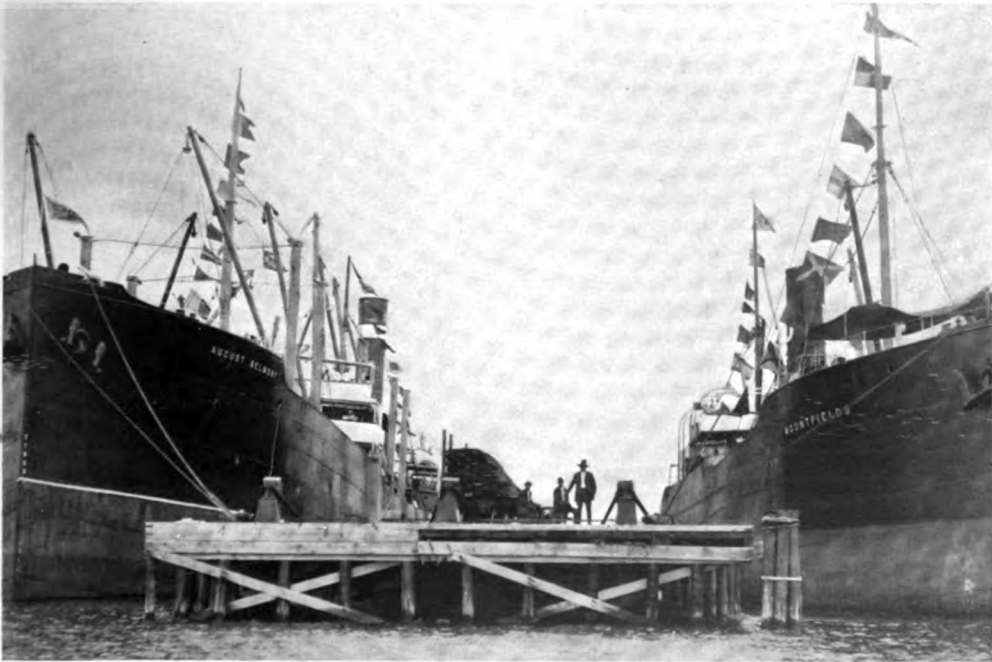
PORT ST. JOE IS BOTH A COMMERCIAL PORT AND A SEASIDE RESORT. THE CLIMATE IS SUCH THAT THE DAILY DIP IS A PLEASURE DURING THE LARGER PORTION OF THE YEAR

than forty vessels for various ports in Europe and South America.

The Port St. Joe Dock and Terminal Railway Company, with a capital of \$1,000,000, has been organized to provide the elaborate and extensive system of docks and terminals needed to take care of the shipping which is rapidly increasing. As it is one of the nearest of the Gulf ports to

Panama, it is reasonable to assume that a large tonnage for shipment through the canal will move via this gateway.

Port St. Joe is only one of several harbors made possible by the development of our natural waterways by private capital, but it is one of the few developments of such magnitude financed outside of Wall Street.



LUMBER CARRIERS AT PORT ST. JOE

ON THIS TRIP THE BIG FREIGHTER "AUGUST BELMONT" TOOK 1,000,000 FEET, AND THE BRITISH STEAMER "MOUNTFIELDS" 2,500,000 FEET, OF LUMBER. THIS NEW PORT, SCARCELY MORE THAN A YEAR OLD, HAS LOADED FORLY VESSELS FOR VARIOUS PORTS IN EUROPE AND SOUTH AMERICA

THE LAND OF THE BEDOUINS



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ON FRIENDLY VISITING TERMS

AS A protection against marauding Bedouin tribes that infested this part of the land the massive walls of the quaint and ancient Mount Sinai Monastery were built by the peace-loving, God-fearing monks under Justinian in 557 A.D. To-day, however, the Bedouins are on friendly, even visiting, terms with the monks, as may be seen in the picture, taken from Jebel Mussa.

The region is still and hushed and almost deserted, except for the life about the monastery, for in this practically water-

ent bare walls of rock, especially in the primitive formations, with steep and jagged summits have a striking effect, which is increased by the various colors of the rock and the clearness of the atmosphere. The deep-cut valleys are filled by rushing torrents after rain, but soon dry up again.

In the center of the main mountain mass is Mount Catherine, 8540 feet high, and north of it Mount Serbal, 6750 feet. These two dominate the waste expanse of sand strewn with pebbles, which occupies the southwest margin of the peninsula.

less, barren country there is less than a thousandth the population of an equal area in England. The mass of mountains now known as Mount Sinai is cut off from the Jebel el-Tih, which attains in fantastic forms an altitude of some 3,000 feet by great valleys. The sandstones of Jebel el-Tih are rich in minerals; inscriptions show that the ancient Egyptians got turquoise at Serabit al-Khadem and at Maghara, where occur the names of kings, from Semerkhey and Khupi down to Rameses II. These mines were worked by criminals and prisoners of war. The waste products of copper foundries indicate that the peninsula was once better wooded than now, but at present

The Sinai group as a whole is called by the Arabs *Jebel al-Tur*.

In the early Christian times prior to the building of the monasteries, of which the St. Catherine is the most famous, many anchorites inhabited Sinai, living for the most part in caves.

Did the hermits choose and settle in this peninsula because there existed a tradition as to the place of the Mountain of the Law? Authorities will, of course, never all agree that this central peak is

the Mountain of the Law, from which Moses delivered the Ten Commandments to the assembled Children of Israel, but certain it is that from the Monastery of St. Catherine a path of granite steps was constructed up to what they believe to be the Mountain of the Law, and in the distance to the right in the picture can be seen the Plain of Assemblage.

In the Monastery are stored the priceless books narrating the history of Christianity in the tongue of every Christian nation. Year by year, however, the recruits are growing smaller, and slowly the Brotherhood of the Mt. Sinai Monks is dying out, so that no doubt the treasures of the Monastery will some day be removed and only a memory remain to remind one of the greatness of Justinian.

Great pride is taken by the Monks in the beautiful cypress trees, which stand in all their majesty in the gardens in the Wade, the Arabic for valley. For a thousand years they have broken the monotony of the desert waste and have cast their welcome shade, wherein the weary traveler and the travel-stained caravan may rest and take shelter from the dreary desert and the burning sun.



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THOUSAND-YEAR-OLD CYPRESS TREES
THE PRIDE OF THE MONKS OF ANCIENT SINAI

THE EMPEROR OF THE EUPHRATES



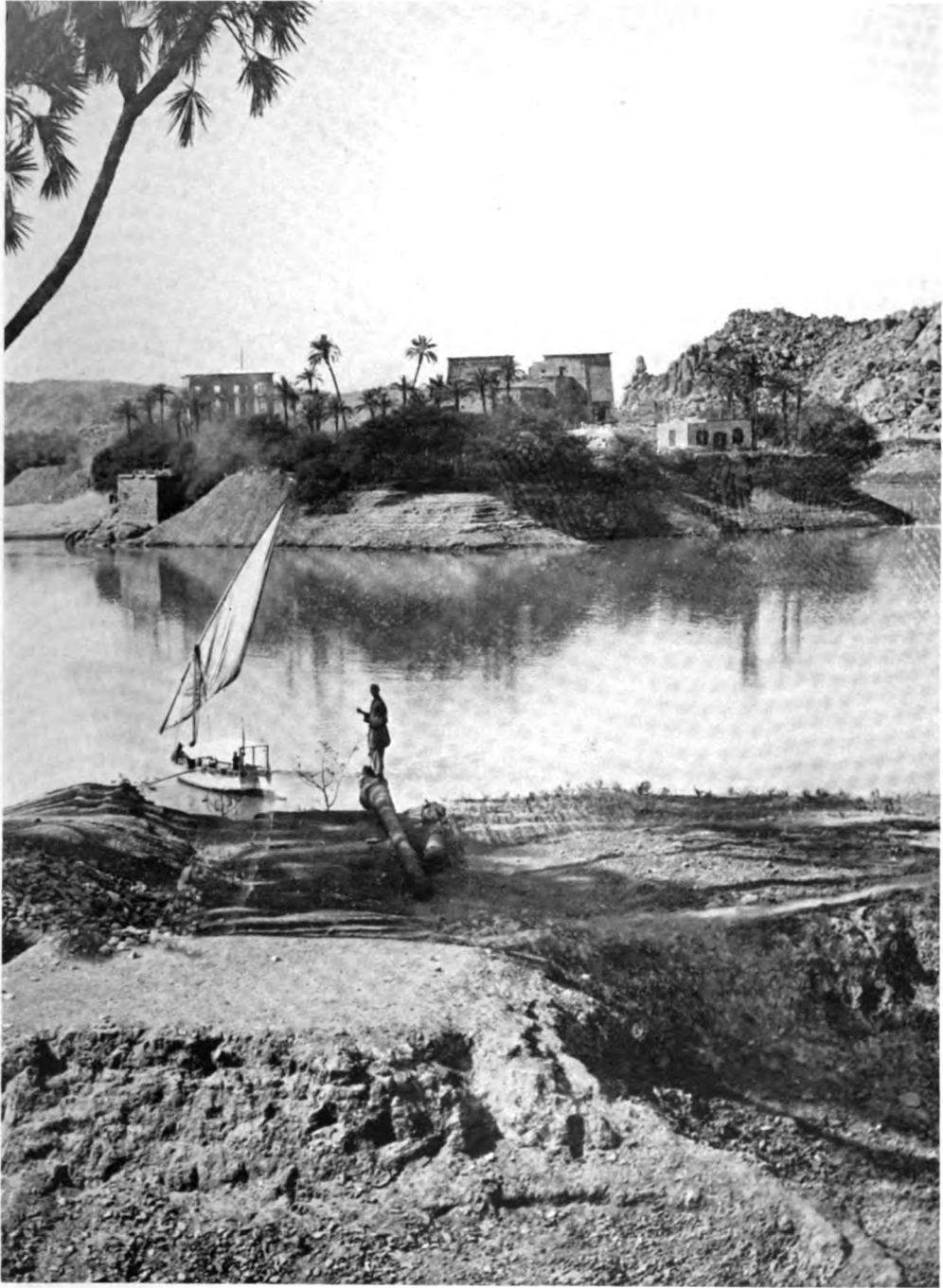
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UP-TO-DATE BOAT BUILDING ON THE SPOT WHERE NOAH BUILT HIS ARK

TIME and tide wait for no man; but here along the Euphrates. Time has moved with the pace of a snail, and even at the present writing the mode of water transportation is either by raft or else by cufa. The latter is a doughnut-shaped boat, whose skeleton framework is covered with goatskins. When in the water these cufas revolve like a merry-go-round. It is because of the pretentiousness of this Venetian gondola-shaped boat, being constructed almost on the identical spot where Noah built the ark that withstood the Flood, that interest is attached to its building.

The builders, with their coffee-colored faces capped by a white turban, recall to one's mind vividly their forefathers who used the same methods in boat construction back in the biblical days as do their plodding and never-changing descendants in the most enlightened and advanced century since the creation of the earth.

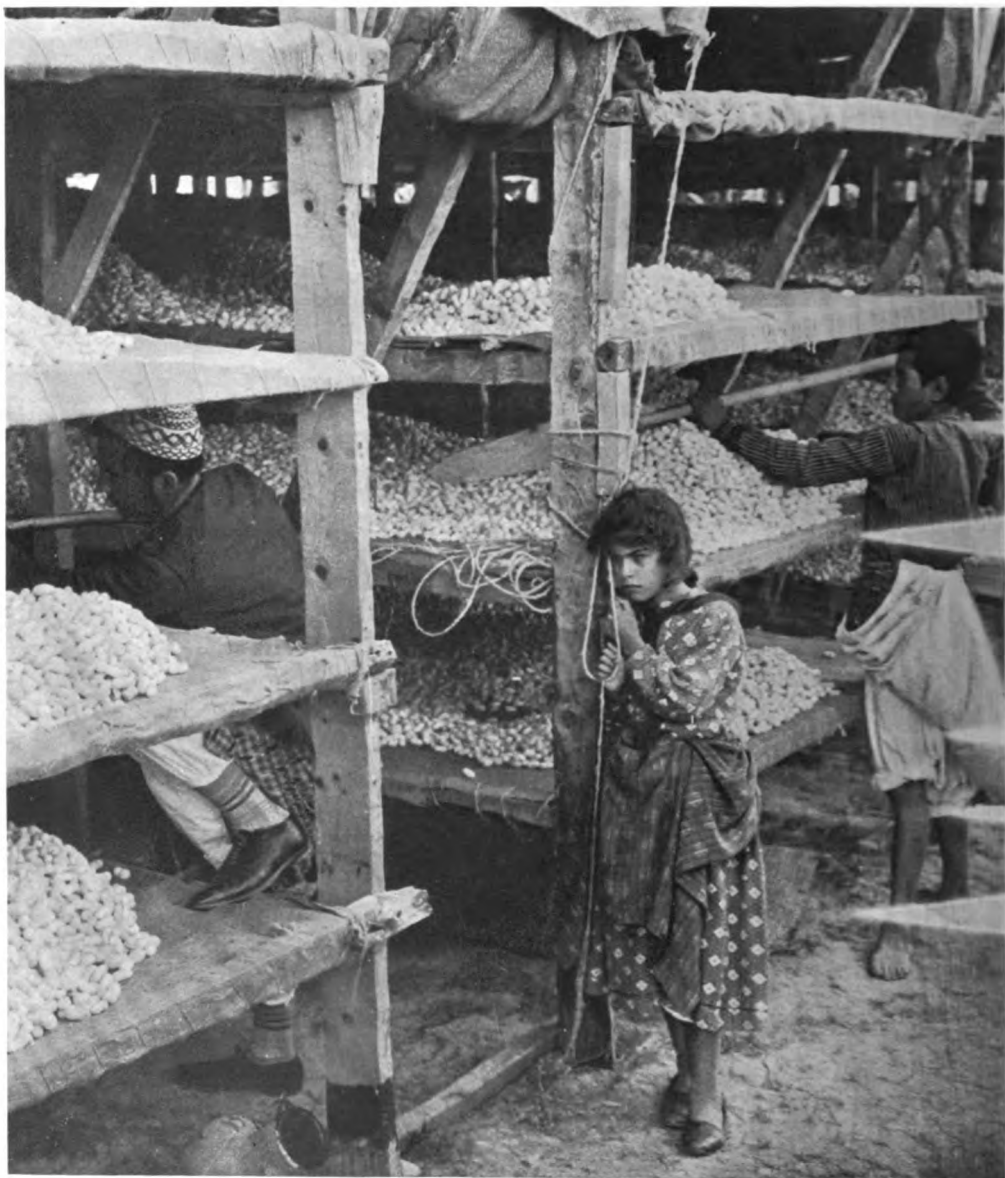
A sort of low platform is made by driving stakes into the ground. Supported by cross-pieces resting on these stakes, the native workmen shape the rakish looking "Emperor of the Euphrates River." The ribs of the boat, slanting upward and outward, are protected by nailing hand-sawed and hewed planks to them. The use of pitch is here unknown. In its place a bituminous stuff resembling coal tar, which sticks tight, is used to fill up the seams and cracks in an effort to make the vessel watertight. Along the Euphrates River there are many places where such bitumen is found in natural pits and ready for use, but the sun of the land has cooked the blood in the veins of the natives to a sluggish degree, and absolute satisfaction is perched on the shoulders of the boat builders when their rough-looking craft is shoved off the ways and wets its nose in the cool waters of the Euphrates River.



Underwood & Underwood, New York

LOVELY PHILAE EMERGES FROM THE FLOODS OF THE NILE

When the water-level of the Assouan Dam was raised another twenty-six feet, recently, the marvelously beautiful Temple of Isis, the Nubian Mandulis and other exquisite monuments of the Pharaohs on the Islet of Philæ became submerged by the flooding waters of the Nile. But from July until October, when the high water finds a free vent through the sluices of Assouan, lovely Philæ once more will be revealed to the admiring eye of pilgrim and traveler. The blinding Egyptian sun will bathe in a glow of light the cleansed and dripping surface of the temples of twenty-four centuries ago.



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CHILD LABOR AN UNRELENTING FACTOR IN THE SILK INDUSTRY

Children are largely employed in silk culture in Broussa, Turkey, and the Ottoman's recent call to the young men of Turkey to bear arms will result in this important industry being left almost entirely in the hands of minors and women. Female labor is necessary in many departments of the industry, as the deffest feminine touch is required in reeling the silk. The strands are so delicate that they snap at the slightest pressure. The thread some-

times measures one four-hundredth of an inch in diameter, and runs a million yards to the pound.

The photograph shows cocoons being dried out to prevent the decomposition of the dead insect inside. The silkworms are killed by being subjected to wet steam to prevent their hatching into moths. The moths burrow out, breaking the threads and spoiling the cocoon. The cocoons are kept drying out for three months and are



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GERMANY'S GOOD ROADS TAKE TOLL OF WOMAN'S WORK

turned over daily so as to dry evenly. The children are employed at this task, and use long wooden-bladed spades to jumble the hundreds of shelves of cocoons.

Broussa is famed for its silk, the cocoons being often three inches long, treble the length of the average Chinese product. Mulberry trees abound in this section, and the climate is ideal for the cultivation. Most of the raw silk is shipped to Italy, where the high-grade Italian silk is manufactured.

Silk cultivation was introduced into Asia Minor in 555 A. D. by two Nestorian monks who smuggled quantities of silk-worm eggs across the border from China, concealing their contraband in the hollows of their pilgrim's staves. At that time it was a capital offense, under the Chinese laws, to export eggs or cocoons.

Another country that offers a striking example of the part taken in manual labor by women and children is Germany.

European roads are much better than American highways, and Yankee tourists, rolling over the smooth, rock-ballasted thoroughfares in their automobiles, fre-

quently comment on the superiority of the German pikes. The accompanying photograph portrays one reason why German roads are better than those in the United States.

The poor old woman shown is breaking stone—breaking stone like convicts in an American state prison—doing her share toward maintaining the great boulevards that criss-cross the empire. Of course she doesn't have to pound up the trap rock into gravel. No, she could pay her road tax of a few marks a year and the township authorities would hire men to do the work, or better still, send the chain gang from the nearest jail to do her share.

But she can't afford to pay the road tax, and so she must work it out, taking her children with her that she may watch them while she is doing it. One of her offspring is so young that it must be transported in a perambulator, while the other is playing by its mother. The woman is not a widow, but her husband cannot leave the work at which he toils for a miserable pittance, or the family would starve.

VIEWS & REVIEWS

IT ought not to be necessary, but it seems advisable, to say that responsibility for statements made and opinions expressed in articles published in NATIONAL WATERWAYS rests solely with the authors whose names are signed thereto. The questions which have only one side are very few in number, and every one who claims the right to present his own views on any subject should be willing to concede the right to be heard to another who holds opposite views. The one supreme power in the United States is the power of public opinion. It is public opinion that establishes laws, creates customs (which are often stronger than laws), and determines the direction and the rate of progress of our national activities. And in order that just laws may be established, wise customs created and beneficial activities promoted, it is essential that public opinion shall be formed only after due consideration has been given to all attainable facts. Since this magazine is meant for those who are continually pushing forward in search of the truth, rather than for those who are content to travel forever in a circular rut, it will from time to time publish articles presenting opposing views on important subjects, as is done in the present issue in relation to the problem of flood control.

THERE is certainly no lack of radical differences in the views presented by Colonel Townsend and Senator Newlands, but there are also some points as to which they are in entire agreement. Colonel Townsend declares that dependence must be placed on the building of levees of ample height and strength, and Senator Newlands, while advocating the use of additional methods of flood prevention, states that the building of levees and revetment of banks must be continued. Both are agreed that much of the damage in the recent floods was caused by bridge piers, embankments for railroads and highways and other encroachments upon the beds or the valleys of rivers, by which the flood waters are held back and dammed up instead of being allowed to run freely away. There is no question that public safety requires not only the prevention of further encroachments but the removal of many which now exist. All the preliminary reports thus far submitted by the Army Engineers who have made special examinations in the recently flooded districts strongly emphasize this point.

Senator Newlands calls attention to the vast advantage which would be gained in many ways if all the farmers in the country would adopt the practice of plowing their lands in level furrows, following the contour of the hills, instead of plowing up hill and down as is generally done at present. In the former case the water would be held until the ground had absorbed all the moisture it could contain, while every furrow running down a hillside is a channel down which the water runs swiftly away, carrying the best of the soil with it. One of the illustrations accompanying the article of Senator Newlands shows in a most striking way the extent to

which it has been necessary to resort to artificial terracing in certain districts in China. The same methods which allow agriculture to exist where it would otherwise be impossible would be of immeasurable advantage in this country, as has been proven by actual demonstration both in the cotton fields of the South and in the forest lands of Minnesota. It would be well if a campaign of education along this line were inaugurated at once, as its cost would be infinitesimal compared to the value of the results which might be attained.

There is nothing whatever to be gained by shutting our eyes to the difficulties involved in any attempt to secure either prevention of floods throughout the whole of our vast area or such degree of control as will keep the crest of the floods below the danger line. As Senator Newlands points out, any plan which is to be successful must be not only scientifically correct but legislatively possible. To these two essentials should be added a third, for it must also be judicially unassailable. The difficulties along any one of the three lines are tremendous. No plan can be scientifically correct unless it is formulated after a thorough investigation by expert engineers. Unfortunately there are some persons, and some publications as well, who not only strenuously advocate, in advance of such investigation, some one of the many plans which have been proposed, but indulge in violent vituperation of any one who fails to follow their leadership. Such persons only advertise their lack either of sincerity or sanity, or both.

That The Flood Prevention Committee of Dayton, Ohio, is both sincere and sane is evidenced by the following resolutions which were adopted on May 3:

Resolved, That it is the sense and best judgment of this committee that there be prompt and definite action to determine the cause of the inundation of the city of Dayton on March 25, 1913, and to apply the maximum of human energy and scientific skill, with the necessary measure of financial resources, to prevent the recurrence of a similar calamity. And be it further

Resolved, That to enable this committee to take up the vast program of surveys, plans, specifications, condemnations, contracts and construction incidental to and connected with the work of protection to life and property, to allay the fears and misgivings of the people, and to reinstate the beautiful city of Dayton as an attractive location for home life, happiness and commercial prestige and success, there shall be provided a flood prevention fund of two million dollars (\$2,000,000); and be it further

* * * * *

Resolved, That this committee devote its greatest efforts and influence to interest the officers and lawmakers of State and Nation in this momentous problem, to the end that the balance of funds necessary to complete the undertaking, through, above and below the city of Dayton, may be appropriated in the regular legal way, and available in this serious work of protection and flood prevention.

The legislative possibility of any plan which may be formed as a result of proper engineering investigation will be largely determined by its cost. And if it will cost \$2,000,000 to prepare and execute a plan for the protection of Dayton, what will be the cost of preparing and executing plans for protecting every portion of the United States which may be damaged by floods?

After the plans have been prepared and the cost has been estimated the difficulties will not be ended; they will only have been fairly begun. If the Federal Government is to take charge of non-navigable streams because of their effect on navigable rivers, is its control to stop short of the spring-house on the farm and the rivulets that flow from melting snows upon the mountain tops? And how long will it take to unravel the endless tangle of conflicting rights, duties, powers, privileges and responsibilities of the Federal, State, county and city governments, and the individual owners of property along the tens of thousands of miles of streams, great and small, that carry the drainage of a continent?

It is not meant to say that the problem is insoluble; but it is meant to point out that it is colossal, and that years of time must pass and untold millions of money be expended before the final solution can be found.

NINETY-FOUR years ago the *Savannah* crossed from the city after which she was named to Liverpool, taking twenty-five days for the journey. She was a wooden boat 130 feet long by 26 feet wide, whose paddle wheels, driven by engines of 90 horsepower, sent her through the water at the dizzy speed of 6 knots per hour.

Ultimate Size of Steamships The *Savannah* is commonly called the first steamship to cross the Atlantic, although, as a matter of fact, she was under steam only a part of the time on her way across. She was built as a sailing ship but before launching was fitted with steam power, her paddle wheels being so arranged that they could be removed and placed on deck when she was proceeding under sail.

In 1858 the *Great Eastern* appeared, built of iron, 680 feet long, and 82.8 feet wide, fitted with both screw and paddle wheels and propelled at a speed of 13 knots by engines of 11,000 horsepower. The *Great Eastern* had a gross tonnage of 18,915 tons, which was five times as great as that of any ship previously built, and it was not until 1901 that this was equalled or exceeded. In that year the *Celtic* of the White Star Line appeared, 680.9 feet long, 75.3 feet wide and of 20,904 gross tonnage.

The next great increase in size came in 1907 when the Cunard Company put out the *Lusitania* and *Mauretania*, 762.2 feet long, 88 feet wide and with a gross tonnage of nearly 32,000 tons. Although already greatly outclassed in size, the two Cunarders have the most powerful engines, 70,000 horsepower, and the greatest speed, 26 knots an hour, of any passenger ships afloat.

Only three years later came the *Olympic* and the ill-fated *Titanic*, of the White Star Line, 850 feet long, 92.5 feet wide and with a gross tonnage of 43,500 tons. Another three years, which brings us to 1913, sees the coming of ships more than 900 feet long. On April 21, from a Clyde shipyard just outside of Glasgow, there was launched the new Cunarder *Aquitania*, 902 feet long, 97 feet wide and of 47,000 gross tons register. June 10 is the date set for the start of the Hamburg-American liner *Imperator* on her maiden voyage from Hamburg to New York. It has been widely published that the length of the *Imperator* is 881 feet, but it is now announced that she is 919 feet long, 98 feet wide and has a gross tonnage of 50,000 tons.

But the *Imperator*, while the largest ship in commission, is not the largest one afloat; that honor belongs to the *Vaterland*, of the same line.

which was launched on April 3. This giant ship, the largest ever built, is 950 feet long, 100 feet wide and has a register of 55,000 gross tons. She is expected to enter the trans-Atlantic service in the spring of 1914, and work is already under way on another ship for the same line which is to be still larger than the *Vaterland*, but how much larger has not been announced. Perhaps the 1,000-foot, 65,000-ton, steamship will help to celebrate the centennial of the crossing of the Atlantic by the *Savannah*.

Even the greatest ports in the world have found it necessary to make special preparations for the accommodation of these giant liners. A year or two ago the Mersey Docks and Harbour Board authorized the construction of a pier at which an 1100-foot steamer may be berthed. Permission was granted by the Secretary of War for the temporary lengthening of a pier in New York to accommodate the *Olympic* and *Titanic*, and the Sinking Fund Commission has now approved plans for the construction of a 1000-foot pier—which can be lengthened to 1200 feet when required—with slips 630 feet wide on each side, at the foot of Forty-sixth Street. This pier is intended to be the beginning of the improvement which the city has decided upon between Forty-fourth and Fifty-sixth Streets to accommodate the great ocean express liners.

The locks on the Panama Canal are 110 feet wide, 41 feet deep and have 1000 feet of usable length. German engineers say they are too small, but the Germans themselves failed to foresee the tremendous increase in size of ships. The Kiel Canal was built during the years from 1887 to 1895, with locks 82 feet wide, 31 feet deep and with a usable length of 492 feet—which it was thought would take care of the largest ship that would ever be built! Now the canal is being deepened and doubled in width and the new locks, which will be the largest in the world, are to be 147.6 feet wide, 45.2 feet deep at mean tide and with a usable length of 1082.6 feet. Who dare say whether or not these huge locks will be outgrown in another twenty years, or whether a 2,000-foot steamer is not a possibility of the future?

TWO great railway improvements are announced for the Northwest, each of which is to be the greatest of its kind in the world. The Chicago, Milwaukee & St. Paul Railway is to electrify its line from Harlowton, Montana, to Avery, Idaho, a distance of 440 miles and crossing three ranges of mountains. This is by far the greatest length of railway electrification yet attempted. The power will be derived mainly from Great Falls and Thompson Falls, and the Government has granted a permit to the Great Falls Power Company to construct a transmission line across public lands to carry power for this electrification.

The Canadian Pacific Railway announces that it is soon to begin the construction of a tunnel beneath the Rocky Mountains. The length will be 16 miles, which is 7 miles longer than the St. Gothard tunnel and 4 miles longer than the Simplon tunnel through the Alps, which is now the longest in the world. The new tunnel, which will cost \$14,000,000 and take seven years to build, will eliminate the dangerous grade through Kicking Horse Pass.

S. A. THOMPSON.



Underwood & Underwood, New York

PEACE ADVOCATES PLAN JUBILEE TO CELEBRATE ONE HUNDREDTH ANNIVERSARY OF TREATY OF GIENT

Smaller picture shows Andrew Carnegie and his guest, Lord Wensdale, of Great Britain, in a jovial mood after leaving the Peace Conference, where it assembled representative men from this and other countries, to plan for a history-making Centennial of the Ghent Treaty, which closed the War of 1812 and marked the beginning of one hundred years of peace among English-speaking people.



NEW TITANIC BEACON

The Titanic Light-
house Tower in-
stalled and Mem-
orial Tablet un-
veiled at the Seaman's In-
stitute, New York,
April 15th.

At the first an-
nual memorial ser-
vices of the sink-
ing of the *Titanic*, Bishop
Greer, in his speech,
said in part that
the lighthouse tower
which tops the new
home of the Seaman's In-
stitute has a fitting significance,
as it throws its rays
across the waters as
far as Sandy Hook.

The tablet reads:
"This lighthouse
tower is a Memorial
to the Passengers,
Officers and Crew of
the steamship *Titanic*,
who died as heroes
when the vessel
sank after a collision
with an iceberg,
Latitude 41-
40, North; Longi-
tude 80-14, West,
April 15th, 1912.
Erected by public
subscription."



Underwood & Underwood, New York

AN OCEAN PORT ON THE MISSISSIPPI



© 1913 Ewing, Photographer

SEVEN OCEAN VESSELS AT BATON ROUGE—MORE THAN

IT will be news to many that Baton Rouge, the capital of Louisiana, which lies some 200 miles from the Gulf of Mexico, is an ocean port, but such is the fact. Since the first of January of this year, more than sixty vessels have been loaded for ports in Europe, South America and the Atlantic coast of the United States. The photograph here reproduced was taken on April 27, when no less than seven vessels were in port at once awaiting their turns to reach the docks of the Standard Oil Company to take on cargoes of kerosene. These docks are to be doubled in size during the coming summer, so that three ships may be docked at once.

At the mouth of the Red River, 316 miles above the head of the passes, the surface of the Mississippi at low water is only a trifle over five feet above the level of the Gulf of Mexico, in which the range of the tides is only about fifteen inches. This portion of the river, therefore, is practically a fresh-water lake which is, in places, from 200 to 400 feet deep. The only limit to the size of ocean vessels which can ascend the Mississippi River to

Baton Rouge, or beyond that to the mouth of the Red River, is the depth of the channel between the jetties at its mouth.

Steamers run regularly from Cologne, which is 210 miles from the sea, to London, Hamburg, Bremen and the chief Baltic ports as far as Riga and St. Petersburg, although the depth of the Rhine at low water is only ten feet, and the ships are necessarily much smaller than those that can go up the Mississippi. Any place on either bank of the "Father of Waters" below the mouth of the Red River can become an ocean port—provided it can furnish the business which will make it worth while for ocean vessels to come after it.

Baton Rouge, which is naturally greatly elated over its growing importance as an ocean port, was one of the earliest French settlements in Louisiana. As a part of what was then West Florida, it passed into the hands of the British in 1763, and in 1779 was captured by the Spanish governor of Louisiana. Later, it again passed into possession of the French, by

RIVER, 200 MILES FROM THE GULF



SIXTY FREIGHTERS HAVE HERE LOADED FOR FOREIGN PORTS

whom it was transferred to the United States. The city, which was incorporated in 1817, became the State capital in 1849 and remained so until 1862, when it was captured by the Union forces and Shreveport became the Confederate State capital. In 1882, the capital came back to Baton Rouge. The population, by the census of 1910, was 14,897.

The people of Baton Rouge have no direct interest in levees nor any fear of floods, since the city lies on a bluff high enough to make its overflow impossible. A number of State institutions are located there, including a State agricultural experiment station, asylums and schools for the deaf and dumb, for the blind and for orphans, the State penitentiary and the State University and Agricultural and Mechanical College. The campus of the college occupies the former location of the Baton Rouge garrison, which has been occupied by the college since 1886 and was transferred to it by the Federal Government in 1902.

It behooves the exporter and other business interests to watch Baton Rouge.

PROGRESS AT PANAMA

The time is rapidly approaching when ships can begin to pass through the Panama Canal. The waters of Gatun Lake are lapping against the guard gates of the Gatun locks, and, during the month just closed, a blast of nearly 33,000 pounds of dynamite tore out the dike which has held back the waters of the Pacific and allowed them to rush in and fill a completed section of the canal below the Miraflores locks. The dike that shuts Gatun Lake out of the Culebra Cut is still in position, and it will be two or three months before the excavation will be sufficiently completed for this dike also to be blown up and the colossal cut allowed to fill.

The exact date when the first vessel can pass through depends upon the progress made upon the lock gates. Work is being pushed as rapidly as possible on the gates in the westerly line of locks, which are expected to be ready for use by October 1, 1913. The completion of the gates on one line of locks will allow the canal to be used, since the water can be kept out of the other locks until their gates are also finished.



Underwood & Underwood, New York

WILD NATIVES AND THEIR HOME, INTERIOR OF PANAMA

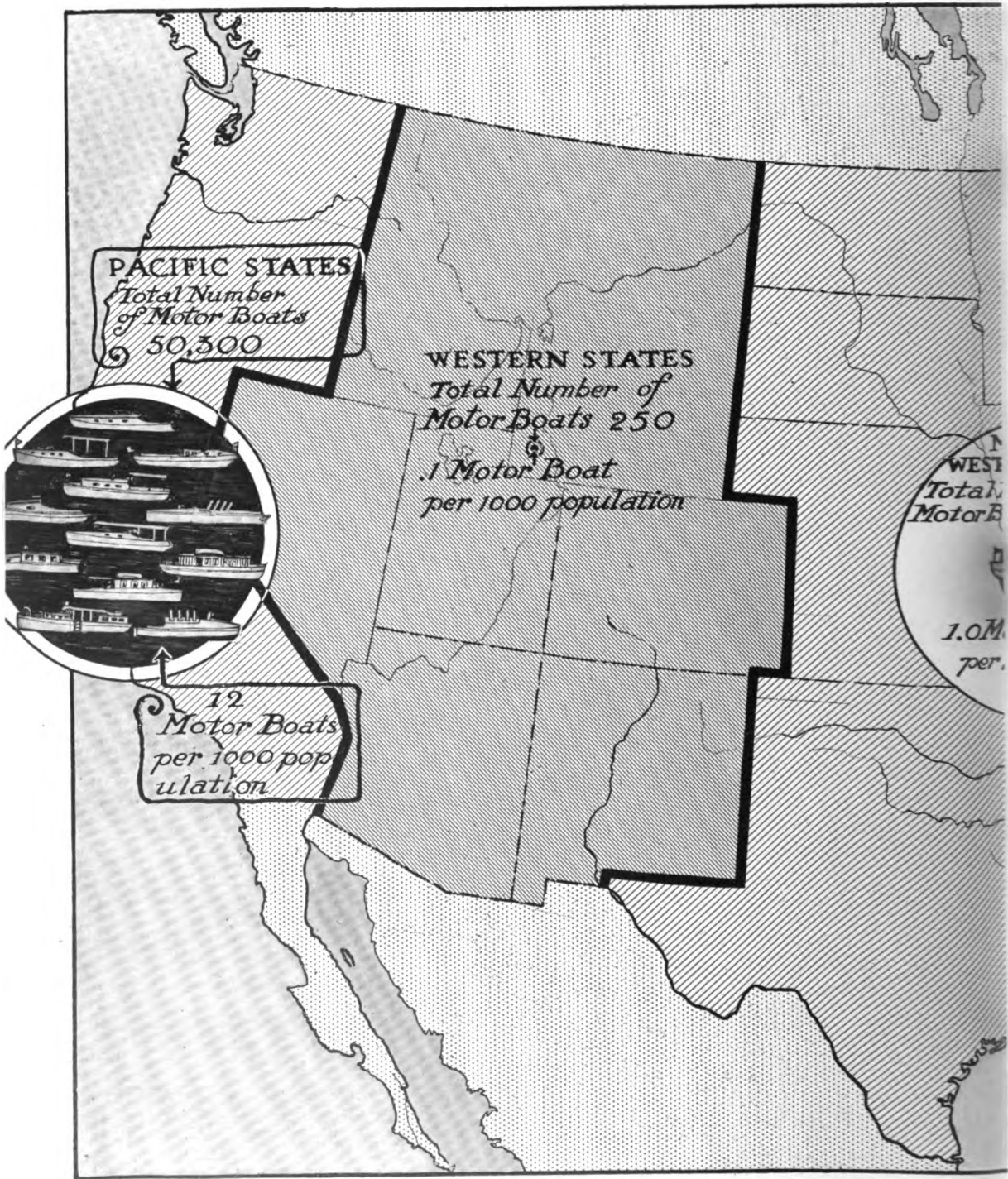
THIRTY miles north of the Canal, almost within sight and hearing of the industrious army busily engaged in bisecting a hemisphere for Uncle Sam, the natives are wild.

As witnessed by the photograph of the young fellow taken under difficulties in the shade of the almost leafless papaya tree on the left, very little consideration is given to the question of clothes.

Though the people are wild, they are not savage. They possess a very retiring disposition, and can only be seen by coming upon them by surprise. The women and children never leave their own settlement, and the men seldom venture more

than a few miles from their home to the local trading posts along the Chagres River, where they dispose of the few pigs and bananas which they raise for a living. An occasional horse may be found in their settlements.

They dwell in tobanks, a thatched hut in which the living room is under the roof. On the first floor of the hut there is a fire-place consisting of four stones on which rests the proverbial kettle, and the only piece of furniture, if it may be called such, consists of two crooked sticks formed into a crude ladder reaching to the parlor and living room, under the thatched roof of the house.



IN THIS COUNTRY THERE ARE 256,350 MOTOR BOATS



THE VALUE OF THIS CRAFT IS OVER \$250,000,000

THE TYPICAL AMERICAN MOTOR BOAT

THE EVOLUTION OF ITS HULL AND POWER PLANT
FROM THE OLD-TIME STEAM LAUNCH

C. F. CHAPMAN

THE Commissioner of Navigation, in his report for the year of 1912, has record of over 125,000 motor boats navigating the waters of the United States. He continues by saying that he believes he has only about 50 per cent. of the total number of motor boats in this country on his roll, which would indicate that the aggregate number is upward of 250,000.

The importance of this statement is not readily conceived by the lay mind, but when one realizes that the average first cost cannot be one cent less than \$1000, it dawns upon him that there must be in the vicinity of \$250,000,000 invested in the products of this great branch of American industries. An estimate of the capital required to produce this great fleet of boats is practically out of the question,

but placing the annual charge for maintenance alone on these motor-driven craft at the low figure of 10 per cent., shows that \$25,000,000 is required each year to keep them in condition. Every dollar's worth of these supplies must be furnished by the American manufacturers and merchants.

Placing the operating costs at a similar amount (10 per cent.), shows that a total of something like \$50,000,000 a year is required and being spent each year by the motor boat owners of the country.

Without doubt a large majority of the American-driven motor boats are under 25 feet in length and powered with motors of 10 horsepower and under. Such a boat is capable of some 7 or 8 miles an hour with a half dozen people on board, and can easily be operated at a cost of about 5 cents

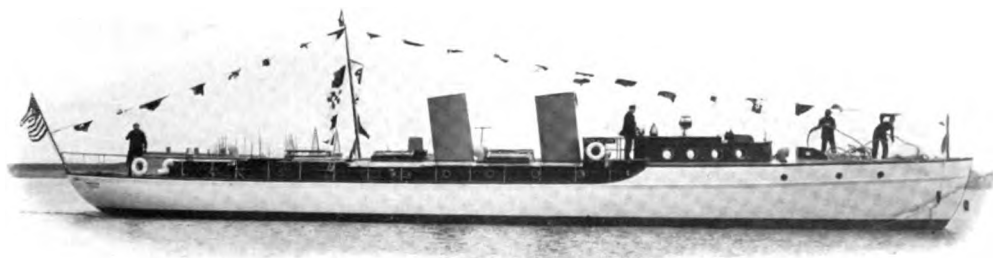
SPEEDY MOTOR CRAFT
REGATTA

RED BANK, NEW JERSEY
1912



Courtesy
"Motor Boating"

The out-and-out speed craft has shown marked development. The best time for 1911 was at the rate of 40.4 statute miles per hour made by a 40-foot hydroplane powered with motors developing 500 horsepower. The competitive record for 1912, of 48 miles, was made by a craft just half this length, having only 150 horsepower. This same hull with 275 horsepower made 53.7 miles down the Mississippi.



TYPICAL OF THE BEST IN MOTOR-DRIVEN CRAFT

A 60-FOOT AMERICAN TWIN SCREW MOTOR YACHT. SHE IS COMMODIOUS IN LIVING AND HANDLING ROOM AND HER APPOINTMENTS ARE LUXURIOUS IN THE EXTREME.

per mile and maintained at an average figure of \$150 per year. Such a craft was not possible until the advent of the internal combustion motor, and since that time both machinery and hull have been rapidly developing, being refined and perfected until to-day there is hardly a bit of resemblance to the old-time steam launch of a few years ago.

Development in the hulls of open runabouts and cruisers has been most sane and rational, and while as much cannot be said about the out-and-out speed boats and hydroplanes, these are, however, beginning to show the result of careful thought and study rather than the unsatisfactory hit-or-miss methods that were employed a few years ago.

In regard to the development of the speed type of motor boat, the year of 1911 may be considered as a great success from an experimental point of view, demonstrating the value of many years of preliminary theoretical study; 1912 plainly showed the result of 1911 efforts, and truly remarkable were these results, too. In 1911 the fastest speed made in competition was 40.4 statute miles per hour, made by a 40-foot Crane hydroplane with two motors of 250 horsepower each. In 1912 a boat of just half this length, powered with only 150 horsepower, developed the remarkable speed of 46 miles per hour, and with a 275 horsepower motor in the same hull did a mile down-stream on the Mississippi River at the rate of 53.7 miles per hour.

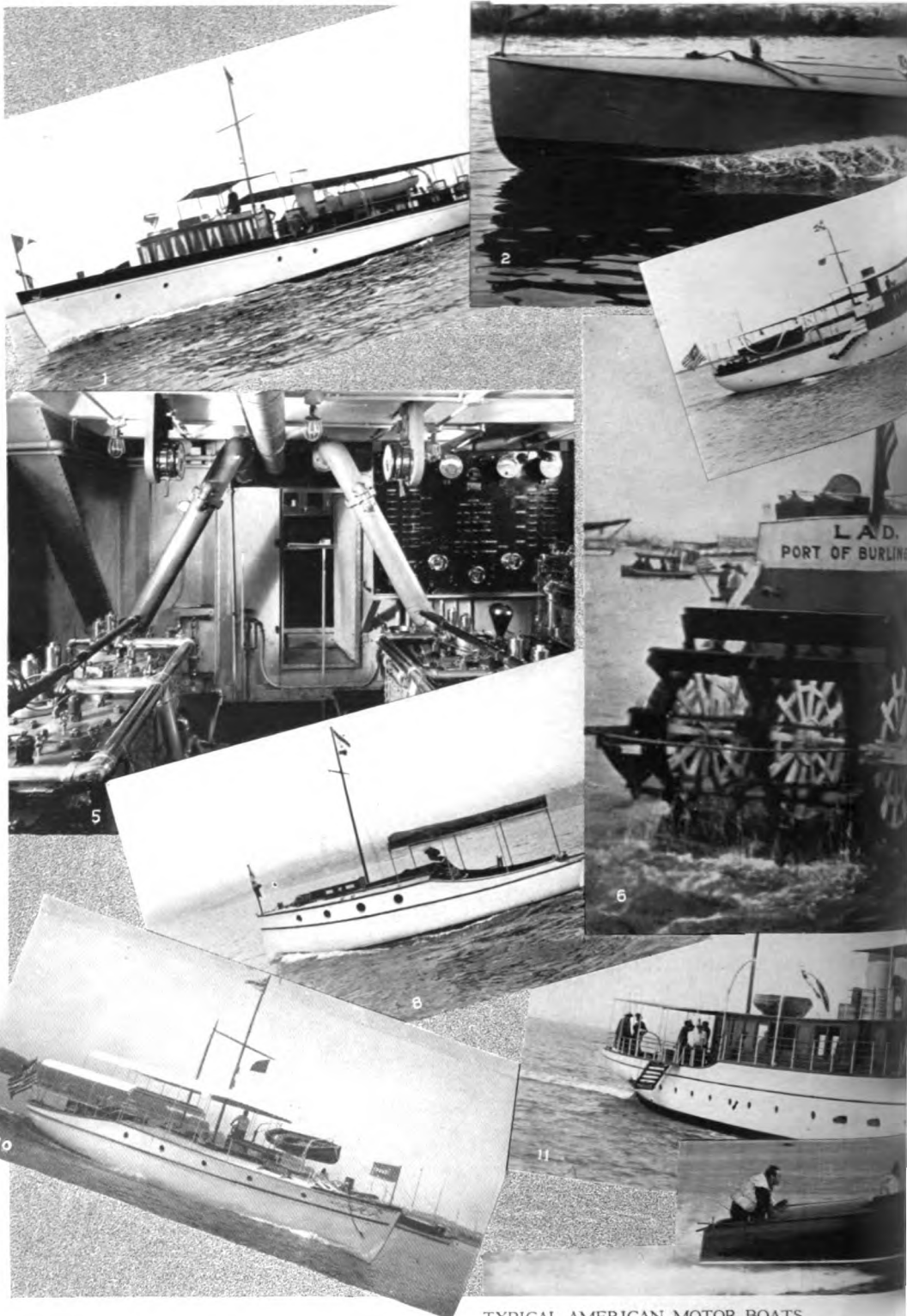
In the small and medium-sized type of cruiser changes in design have been going along gradually for the last few years until now we find the earlier horse car variety of glass-cabin type entirely superseded by the raised-deck cruiser, which is

strong, more seaworthy and roomier, and decidedly more pleasing to the eye than the older series. In boats of this type, of about 30 or 33 feet in length and upward, we find full headroom and living accommodations for four persons besides an ample amount of cockpit and deck providing for a much larger party for day trips.

The interior or cabin layouts necessarily vary considerably to suit the particular needs of the owner, but in general it is planned for the comfort and convenience of the entire party rather than from a speed standpoint. Electric lights, running water, ample storage space for provisions are invariably provided and made possible by this type of cruiser.

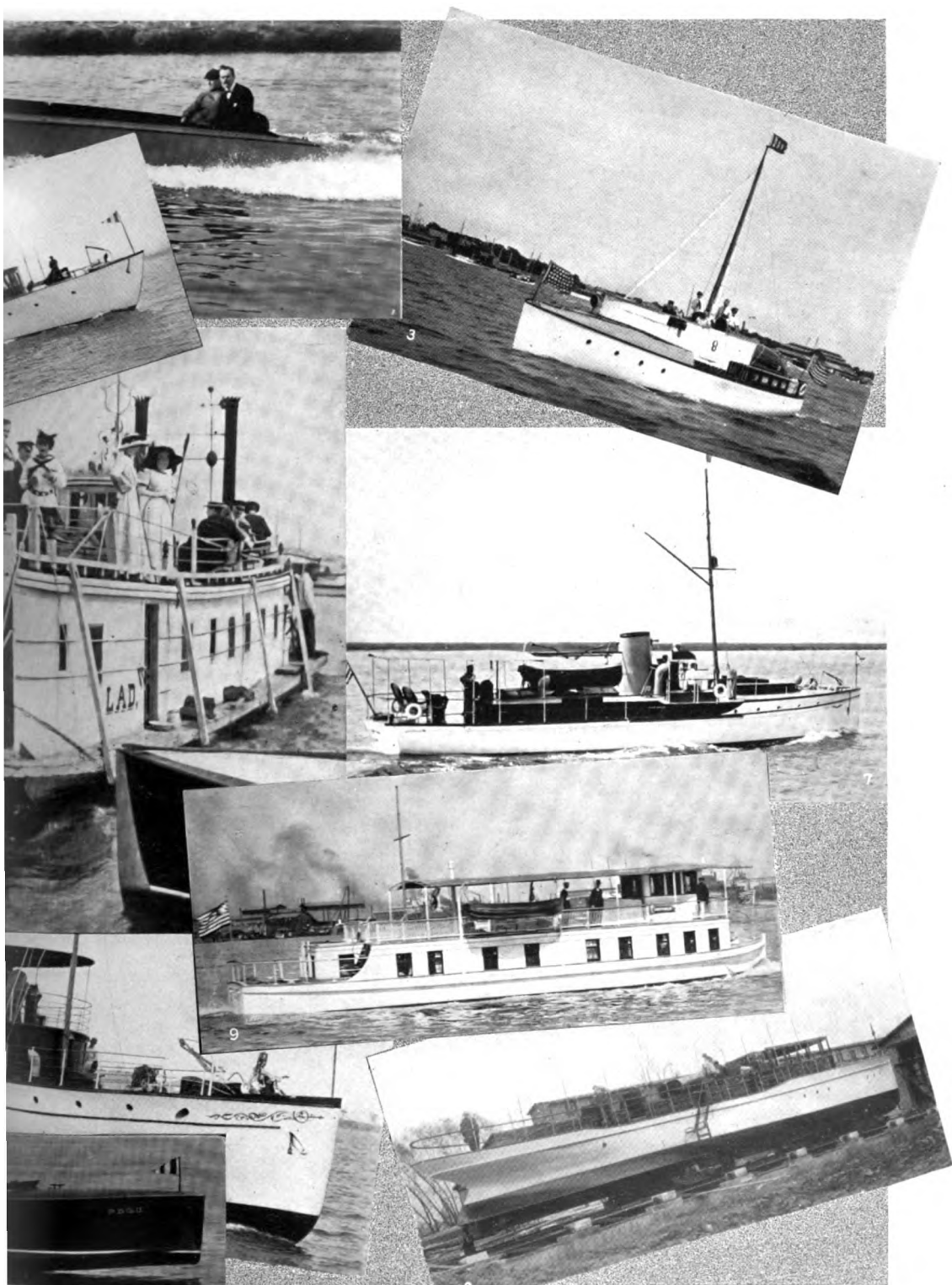
The question of the proper and most desirable amount of beam to give this type of boat is one which has been recently receiving a large amount of attention from designers and engineers. There is a certain definite relation between length, beam and power for economical propulsion, and to depart from these proportions, favoring any of them more than the other, is bound to produce more or less unsatisfactory results. A correct amount of beam to give the average cruiser is about one-ninth of her length plus 5 feet; that is, a beam of 11 feet is about right for a 54-footer and 9 feet for a 36-footer.

In the small cruisers, a type that gives indication that it will replace the raised deck is the double-cabin arrangement, which works out very nicely in boats of upward of 36 feet in length. This arrangement provides two separate and distinct cabins, a decided advantage when cruising with a paid hand or a party. Some boats of this class have a small raised deck cabin forward, occupying the forward 10 or 12



TYPICAL AMERICAN MOTOR BOATS

1—ELCO MOTOR YACHT. 2—TWENTY-THREE MILE RUNABOUT. 3—"ERONEL II," LONG DISTANCE CHAMPION. 4—LUXURY AND
 10—ECONOMICAL AND RELIABLE MOTOR YACHT. 11—STEEL HULL AND TWIN S&S



TYPICAL AMERICAN MOTOR BOATS

TWIN SCREW MOTORS. 6—SHALLOW DRAFT STERN WHEELER. 7—OCEAN CRUISER. 8—ONE MAN CRUISER. 9—60-FT. MOTOR HOUSE.
 10—TUNNELL STERN BOAT FOR SHALLOW WATERS. 11—CRANE HYDROPLANE, SPEED 38 MILES.

feet of the boat and providing quarters for the galley, ice-box, tanks, etc., and, generally, sleeping accommodations for one. Immediately aft of this is a large cockpit, aft of which is the main cabin, raised above the deck in the form of a trunk cabin, containing the living accommodations.

In this type of cruiser the engine is under the cockpit floor, with provision for removing large hatches in same for making the engine get-at-able.

Another type of double-cabin cruiser provides a long raised deck cabin forward, containing the living accommodations and power plant. The cockpit is located aft of amidships and may be of the flush deck or sunken variety. Aft of this is a small cabin with raised deck, generally containing sleeping quarters for two and oftentimes the galley, etc.

The question of the proper power for motor cruisers is naturally one on which no two authorities will agree. For the small cruisers up to 30 feet in length a speed of about 9 miles per hour is normal and can be obtained with from 10 to 15 horsepower. To increase this speed to 10 miles per hour would require almost a 50 per cent. increase in power.

The average cruiser between 30 and 45 feet in length will require in the neighborhood of 25 horsepower; 40 to 50-foot boats, about 40 horsepower; 55 to 65 footers, 40 horsepower; boats having an overall length of between 65 and 75 feet require 70 to 75 horsepower and the larger sizes up to 90-foot motor yachts need about 90 horsepower for economical results and reasonable speed.

The foregoing powers will give speeds

which increase slightly as the boats become greater in length, from 9 miles per hour for the shorter ones, up to 15 miles with an 80-footer with 90 horsepower.

Rotary speeds should not exceed 600 revolutions per minute and should preferably be less. Light weight or automobile motors are decidedly out of place in the cruiser and cannot be relied upon to give satisfaction. Fifty pounds per horsepower for the four-cycle type and about 40 pounds per horsepower in two-cycle practice is about right.

Multi-cylinder engines give decidedly more economy in regard to weight and piston displacement than do the single-cylinder machines. In some cases this amounts to a difference of 100 per cent. between the power delivered by a single-cylinder motor and that from a four-cylinder engine of the same total piston displacement.

The piston displacement per brake horsepower for the average four-cycle motors suitable for cruiser work amounts to about 20 cubic inches and in similar two-cycle motors to about 15 cubic inches per brake horsepower, varying somewhat, of course, with design of both motor and hull.

Total piston displacement also is an important feature from an economic standpoint. It should neither be too great nor too small. For the average proportioned boat a reasonable amount of piston displacement for four-cycle motors is somewhere between the boat length squared divided by 4, and length squared divided by 2. In two-cycle practice these limits can be reduced from 15 to 20 per cent without loss of power.

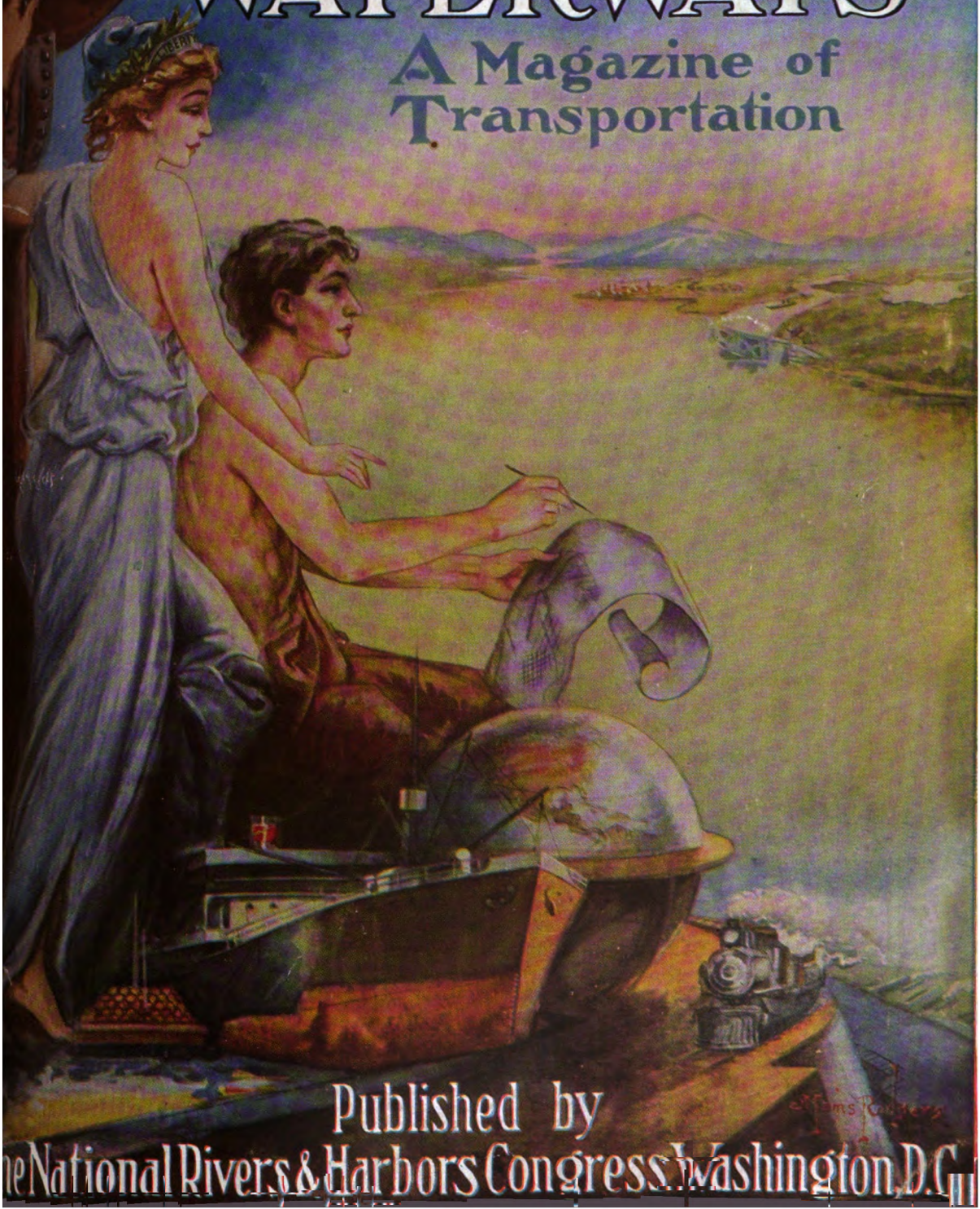


"BUG," THE KING OF SIXTEEN FOOTERS
THIS 16-FOOT HYDROPLANE IS CAPABLE OF 30 MILES PER HOUR WITH A 40-HORSEPOWER ENGINE



NATIONAL WATERWAYS

A Magazine of Transportation



Published by
the National Rivers & Harbors Congress, Washington, D.C.

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Throttle closed when at this point

With Texaco Motor Oil

Without Texaco Motor Oil

Reduces Gasoline Consumption 15% to 31%

YOUR throttle tells the story of gas consumption and power developed—tells it truthfully and graphically. When your motor is developing full power the throttle is not opened so wide to give a speed of say twenty miles an hour, as when the motor is acting poorly. The consumption in gasoline is not as great.

Texaco Motor Oil reduces gasoline consumption by *increasing* power. A large manufacturer of motor cars (name on request) conducted several tests among lubricants competitive with Texaco Motor Oil. The oil that these tests proved to be the *best* was twice tested against Texaco with the following results in favor of the latter:

Test No. 1

Decrease in gasoline consumption per 8 hours run, 3.21 gals., or 31.3%.

Decrease in lubricating oil consumption per 8 hours run, 313 gals., or 24%.

Increase in miles per gallon of gasoline, 5.7, or 31%.

Increase in miles per gallon of lubricating oil, 33.1 or 24%.

Test No. 2

Reduction in gasoline consumption per 7 hours, 5.187 gals., or 28%.

Reduction in lubricating oil consumption per 7 hours, .375 gals., or 33%.

Reduction in gasoline consumption per 10 h.p. hours, .741 gals. or 28%.

Reduction in lubricating oil consumption per 10 h.p. hours, .0537 gals., or 33%.

Space permits us to give here the results of only these two tests. Data with regard to others will be furnished gladly on request.

You get more out of your motor in the way of power and put less into it in the way of gasoline and oil when you use Texaco.

Texaco Motor Oil is for sale in 1 and 5 gallon cans at most good garages and supply shops. Ask for it. For interesting and informative booklet, "Maintaining a Motor Car," address Dept., F,

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NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*

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Gems

of the

Piano World

The painter's art lies upon the surface of the world; he reproduces nature as he finds it; but the musician's and piano maker's art lies beneath the surface.

The rough material of Harmony, like the diamond, is in deep mines, earth encrusted, and does not exist as a thing of priceless beauty until refined and made luminous by earnest, painstaking toil.



Petite Grand—\$650

Kimball Pianos Result of 56 Years' Experience

They are the product of ripe experience, good material and good intentions, and the *intent* of the manufacturer marks the difference between things made to *serve* and things made to *sell*. The makers of Kimball Pianos find it profitable to devote greater thought to the making than to the selling, hence orders for Kimball Pianos are always in advance of the production.



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ESTABLISHED 1857

W. W. Kimball Co.

304-308 South Wabash Avenue

Chicago

Please Mention NATIONAL WATERWAYS



A DUTCH CANAL

*Courtesy
Phototype Engraving Company, Inc.
Philadelphia*

NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I

JULY, 1913

NUMBER 5

THE GREATEST SHIP IN THE WORLD

THE *IMPERATOR* AT CLOSE RANGE

"IN MAGNIFICENCE of dimensions, solidity of construction, the comprehensiveness of the provisions made to prevent disaster and the extent of the equipment to insure the safety of her passengers if disaster should occur, in the amplitude of decks and promenades, the spacious comfort of her state-rooms, the extent and variety of the appliances for the promotion of health and the provision of amusement, and in the sumptuous magnificence of her grand saloons and dining halls, the Emperor is the greatest ship in the world."

AT 9.20 o'clock on the morning of Thursday, June 19, 1913, a steamship weighed anchor at Quarantine, which she had reached the night before, and started up the harbor of New York toward her landing place. Hundreds and thousands of steamships make the same journey every year and little notice is taken of them, but for some reason this ship was the center of attraction and her progress was like a triumphal procession. Graceful, snow-white yachts, dingy fishing smacks, excursion steamers, motor boats—craft of every shape and size and kind came thronging down to meet her and turned to follow in her wake.

All the way up she was greeted by a bedlam of sound, made up of everything from the hoarse blasts of outgoing ocean liners to the penny-whistle toots of diminutive motor boats and the raucous tones of fish horns on the sailing craft.

Every pier and street-end and half the housetops on the Jersey shore were full of cheering people, while on the Manhattan side, some two or three thousand persons were waiting on the Battery sea-wall to wave their hats, and countless handkerchiefs fluttered from the windows of towering skyscrapers.

Presently the ship slowed down and a flock of a dozen tugs gathered about her, some pulling, some pushing, but all of them puffing with all their might, while the ship's own screws were used to aid their efforts. Forty-five minutes later, at 11.32 o'clock, to be exact, the tugs had done their work, the lines were fast at bow and stern—and the greatest ship in the world had finished her first voyage across the Atlantic.

What a marvelous moving picture it would make if it were possible to portray the progress which has been made in the

art of navigation from its beginning, far back in pre-historic time, down to the present day! No doubt the first voyage ever made was taken, much against his will, by one of our remote ancestors astride a tree trunk in the turbid waters of some sudden flood. Perhaps the second was made by the same ancestor, who got safely back to land with a new idea in his head and, later, crossed a stream upon a log, using his hands as paddles. From this the transition was easy to a raft propelled by poles, and at last some genius of a long-gone age hollowed out a log with fire and gave the world the first thing that, crude and clumsy though it was, was entitled to be called a boat.

As the slow centuries drifted by the

need for larger craft was felt and greater skill was developed for their building. For vessels moved by human strength the climax was reached in the Roman galley, with its many banks of oars, and then precedence passed to ships propelled by sails, and of this latter class the staunchest, swiftest and most beautiful the world has ever seen were the clipper ships built in American shipyards. It is a far cry from the hairy savage in his dugout to the *Imperator*, but it is probably not too much to say that there have been more changes and improvements in the building of ships in the trifle over one hundred years since Watt and Fulton did their epoch-making work than were made in all the centuries before.

Not only in one, but in many ways, the *Imperator* is the greatest ship yet placed



Brown & Dawson, Stamford, Conn.

THE GREATEST SHIP IN THE WORLD

SIMPLY TO SAY THAT THE "IMPERATOR" IS 610 FEET LONG AND 68 FEET WIDE DOES NOT ENABLE ONE TO REALIZE HOW NECESSARY TO CUT AWAY THE BUILDINGS FOR EIGHTEEN FEET ON EACH SIDE OF THE ROADWAY.

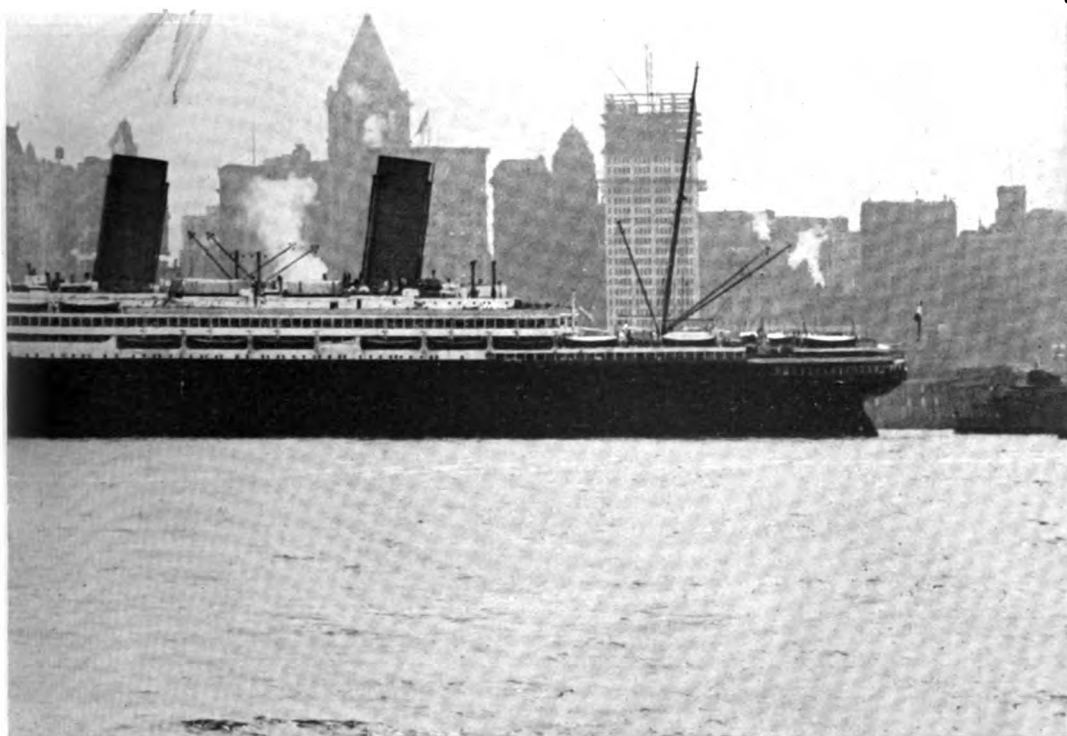
in service. Unquestionably she is the largest, but because everything is in proportion she does not appear at first sight to be much larger than some of the liners that have preceded her; one must take a little time and study a few statistics in order to realize how colossal she really is.

From the end of her overhanging stern to the beak of the gigantic gilded eagle that serves as a figurehead the distance is 919 feet, while her beam is 98 feet. Even these figures do not give a clear idea of her size. If she were set down on Broadway she would cover a distance of four blocks and it would be necessary to cut away 18 feet of the buildings on each side. The Woolworth Building is the highest office building in the world, but if the *Imperator* were stood on end alongside it would overtop the skyscraper by more than 150 feet. The officers' bridge is 90 feet above the water; the top of her masts is 246 feet above the keel, while her

funnels extend 69 feet above the upper deck and have openings 18 by 32 feet in size—large enough to serve as double-track railway tunnels.

The *Imperator* has a gross tonnage of 50,000, which is 5,500 tons larger than the Olympic, and her displacement when loaded to her full capacity will be almost 60,000 tons. To propel this vast bulk and weight through the water there are four screws, made of turbadium bronze, each more than 16 feet in diameter, which are driven at a normal speed of 185 revolutions per minute by mammoth quadruple turbine engines which develop 62,000 horse-power.

Weather conditions were not the most favorable on her maiden voyage, as there was fog or rough water all the way across, and no attempt was made to drive her at top speed. But at that the run of 3153 miles from Cherbourg Breakwater to Ambrose Channel Lightship was made in



WITH A BACKGROUND OF SKYSCRAPERS

SHE IS, IF SHE WERE SET DOWN ON BROADWAY SHE WOULD EXTEND FOR A DISTANCE OF FOUR BLOCKS AND IT WOULD BE UPPER DECKS WOULD OVERTOP THE SIX AND SEVEN-STORY BUILDINGS PUT UP BEFORE THE SKYSCRAPER PERIOD

6 days, 5 hours and 14 minutes, an average speed of 21.13 knots an hour. On the one day when she ran at full speed, but with only 40 of her 46 boilers in use, she made 556 miles. When her machinery has been worn smooth, it is probable that, with all her boilers in use and fairly favorable weather, she can make $23\frac{1}{2}$ knots, or a trifle over 27 land miles, per hour. Captain Hopkins, the pilot who took charge at Sandy Hook, declared she steered like a yacht and handled so easily that he believes she could have been docked without the use of tugs.

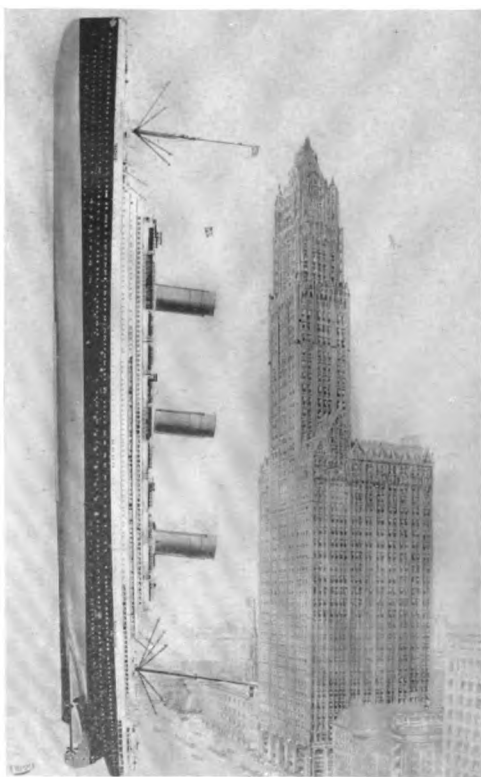
In her construction 1800 men were employed for three years, making a total of more than 1,000,000 working days. The contract was given to the Vulcan Works, of Hamburg, June 18, 1910, and she was christened by His Majesty Kaiser William II and launched May 23, 1912, after which more than a year was needed to make her ready for service. For the sake of those who are fond of details it

may be added that she has 327 steel ribs on each side, each of which weighs thirty hundredweight; that the steel plates, angles, etc., weigh 52,000,000 pounds; that she carries five anchors, the main anchor weighing 26,455 pounds; and that these anchors are secured by huge chains which have a total length of three-quarters of a mile.

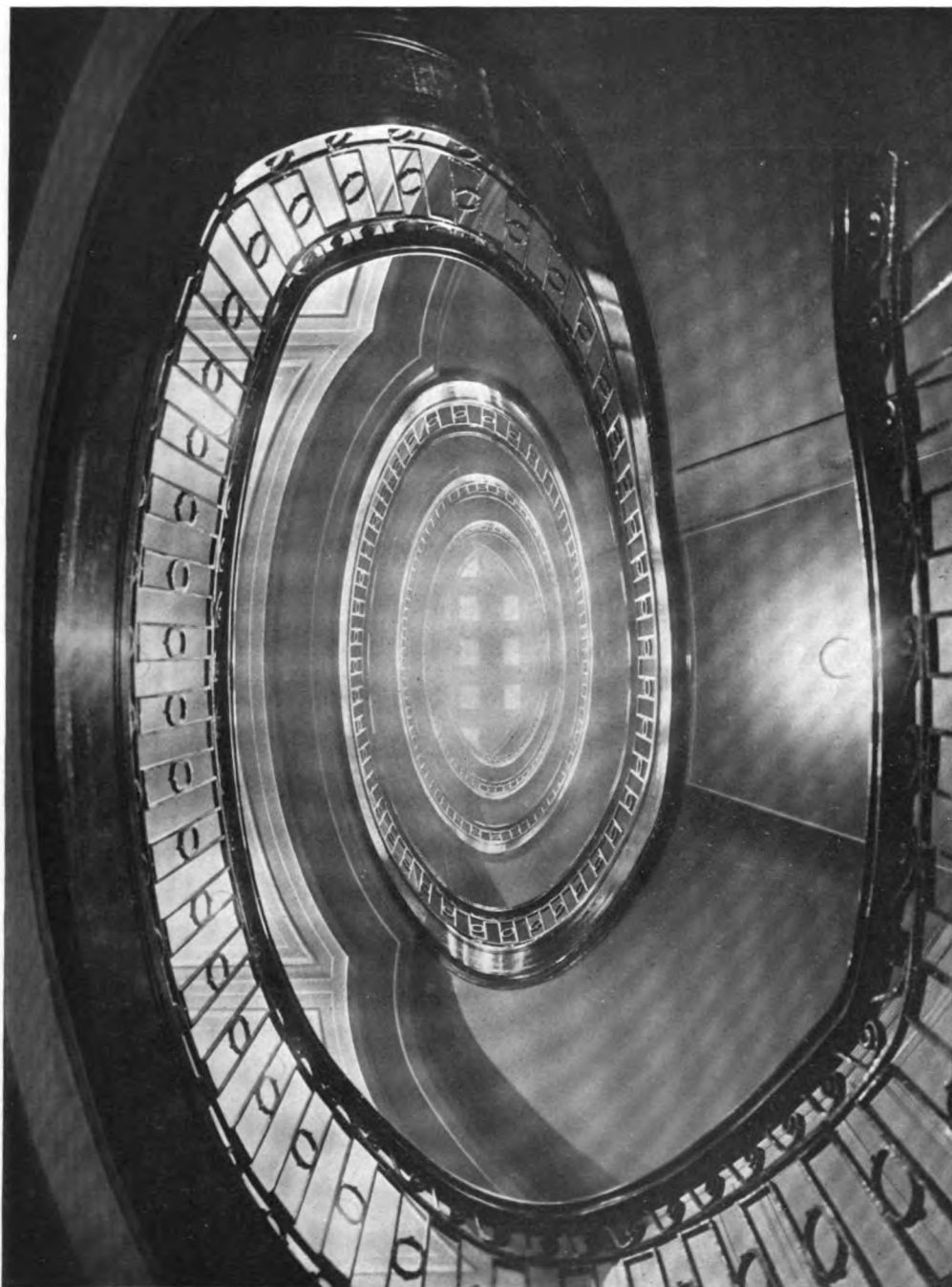
The *Imperator* carries no less than five captains, Captain Ruser being commander-in-chief. Of the other four Captain Hoefler is the navigating officer and has charge of the watches; Captains Heyer and Schetelig take turns at bridge duty, and Captain Meibom looks after the general efficiency and cleanliness of the ship. She is manned by a crew of 1180, selected from those who have had long service on other ships of the Hamburg-American line.

Even more important than size is the question of safety, and in the construction of the *Imperator* everything has been embodied that foresight could devise or experience suggest. To begin with, she is built with an inner skin—a ship within a ship—so that if the outer skin is broken she will still keep afloat. In addition to the inner skin she is divided by transverse and longitudinal bulkheads into 36 watertight compartments. These steel bulkheads, a single one of which weighs 1200 hundredweight, are carried up to the level of the second deck, well above the water-line. And it should be added that the compartments are actually, and not merely theoretically, watertight, for they have been completely filled with water, to test their efficiency under extreme conditions, and any leaks that developed were stopped by caulking. The bulkheads are fitted with Dorrsher doors and closing appliances operated hydraulically from the commander's bridge, while a second appliance, operated from the upper deck, is held in reserve.

The *Imperator* did not see any ice on the way over, because, when ice was reported by the *Olympic*, Commander Ruser went thirty miles south of his regular course in order to avoid it. But if he had collided with an iceberg every soul on board could have been given place in a life-boat, of which no less than 83 are carried. Two of these are high-powered motor boats, capable of towing all the others, and



IF STOOD ON END BESIDE THE WOOLWORTH BUILDING THE "IMPERATOR" WOULD OVERTOP IT BY MORE THAN 150 FEET



Brown & Dawson, Stamford, Conn.

NO, THIS POSITIVELY IS NOT A CUBIST PICTURE

THIS IS A VIEW LOOKING STRAIGHT UP FROM THE BOTTOM OF THE ELLIPTICAL STAIRWAY TO THE SKYLIGHT SIX OR SEVEN STORIES ABOVE. TRY HOLDING IT ABOVE YOUR HEAD AND LOOKING STRAIGHT UP AT IT



Brown & Dawson, Stamford, Conn.

ONE OF THE PROTECTED PROMENADES

TWO OF THE THREE GREAT DECKS ARE PARTLY ENCLOSED, GIVING OPPORTUNITY FOR EXERCISE AND RECREATION, NO MATTER WHAT THE WEATHER. THE PROMENADES VARY IN WIDTH FROM SIXTEEN TO TWENTY-THREE FEET



Brown & Dawson, Stamford, Conn.

THE PALM GARDEN AND RITZ-CARLTON RESTAURANT

THE RESTAURANT IS CHARACTERIZED BY A RAISED PLATFORM EXACTLY REPRODUCING THE DINING ROOMS UNDER THE SAME MANAGEMENT IN LONDON, PARIS AND NEW YORK. THE WINTER GARDEN ADJOINING IS FILLED WITH PALMS AND OTHER TROPICAL PLANTS



Brown & Dawson, Stamford, Conn.

READY FOR THE PRIMA DONNA'S COMING

AT ONE END OF THE GRAND SALOON THERE IS A HANDSOMELY APPOINTED CONCERT STAGE FROM WHICH, SOONER OR LATER, MANY OF THE GREATEST SINGERS AND INSTRUMENTALISTS OF THE WORLD WILL BE HEARD.



A GLIMPSE OF THE MAIN STAIRWAY

ON A LANDING OF THE MAIN STAIRWAY THERE IS A SUPERB PORTRAIT OF EMPEROR WILLIAM II STANDING ON THE DECK OF A BATTLESHIP. NOTE HOW THE FIGURE SEEMS TO STAND OUT FROM THE CANVAS

equipped with wireless apparatus which will work over 200 miles. Many of these life-boats are carried on the upper deck, between the funnels, and can be launched on either side of the ship. The safety equipment also includes life-belts for everybody and illuminated life-buoys. The wireless telegraph equipment of the *Imperator* is sufficiently powerful to work over a range of 1,500 sea miles. The ship has two reserve antennae and two receiving instruments for long and short waves, designed for news service and rescue work. The station is directed by three expert

operators, one of whom will always be at the key. The *Imperator* will be in direct communication with land throughout the Atlantic crossing.

Being assured of safety, the traveler next thinks of comfort. Passengers who came over on the first voyage speak enthusiastically of the steadiness of the *Imperator*. Her great size would naturally make her steadier in rough weather than smaller ships, and in addition to this, she has been equipped with Schlinger anti-rolling tanks, or wave motion absorbers.

An ocean traveler who does not get seasick, usually gets very hungry and has a deep and abiding interest in the dining-room and the kitchen. On the *Imperator* one is not confined to a single room and to a selection from a single bill of fare, nor even to such choice as is possible in a hotel which uses both the American and European plans. The main dining-room, which has a capacity of some 700 and will seat all the first cabin passengers at one time, compares very favorably, both as to size and sumptuousness, with those of the largest hotels. It extends the whole width of the ship, occupies two decks and is surmounted by a great glass dome. One may enjoy an entirely different cuisine in the Ritz-Carlton restaurant, for which another spacious dining saloon, with an entirely different decorative style, has been designed, and still further variety is afforded by the grill-room and veranda cafe. There are also a number of small dining-rooms for the use of special parties, in addition to those connected with the private suites. In addition to the regular meals served on board, passengers may order a la carte at any hour of the day.

To supply these various dining-rooms with food there are not less than eight kitchens, equipped with all the newest time and labor-saving devices, many of which are operated by electricity. Among these are ingenious electrical plate-washers, knife-cleaning machines, egg-cookers, etc. The kitchen personnel is directed by two chief chefs, one presiding over first-cabin kitchens, the second for the Ritz-Carlton restaurant, assisted by a staff of 116 assistant cooks and kitchen functionaries. This staff includes five pastry cooks, five butchers, and a special sauce chef. There is a head washer assisted



International News Service

LOOKING ALONG THE SIDE OF THE "IMPERATOR," THE CAPTAIN ON THE BRIDGE IS 90 FEET ABOVE THE WATER



International News Service

· THE FIVE CAPTAINS OF THE *IMPERATOR*

BESIDES VICE-ADMIRAL RUSER (IN CENTER) THERE ARE FOUR JUNIOR CAPTAINS, OF WHOM ONE IS THE NAVIGATING OFFICER, TWO OTHERS TAKE TURNS IN BRIDGE DUTY AND THE FOURTH LOOKS AFTER THE CLEANLINESS AND GENERAL EFFICIENCY OF THE SHIP

by twenty-one silver and glass cleaners. An additional staff of sixty-two stewards assist in the preparation of the meals and as many more in the subsequent work. The total serving personnel of the *Imperator* comprises more than 500 persons.

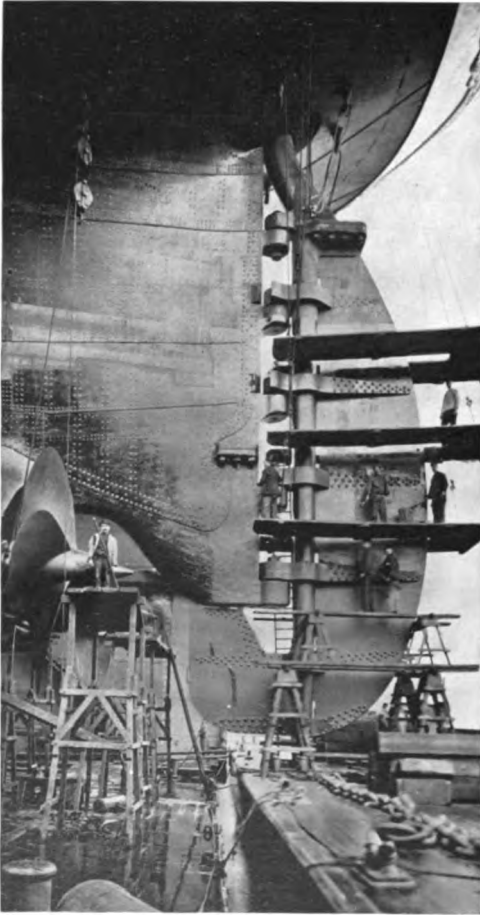
In a vast floating hotel, for that is what the *Imperator* really is, an enormous food supply must be provided for the chefs who cater to the needs and wishes of 5,000 persons during a voyage of seven days. The cold storage rooms for meats, fowl, vegetables, butter, milk, eggs and canned goods, the wine cellars and beer cellars are among the largest of their kind in the world. The *Imperator* takes on board for a seven-day voyage between New York and Hamburg some 48,500 pounds of fresh meats, 48,000 eggs, 121,000 pounds of potatoes, 27,500 pounds of fresh vegetables, 6,000 tins of canned vegetables, 10,500 pounds of fowl and game, 9,000 pounds of fish and shell fish, 800 pounds

of mushrooms, 4,000 cans of preserved fruits, 12,500 quarts of milk and cream, 400 pounds of tea, 500 pounds of chocolate and cocoa and 7,000 pounds of coffee.

The huge dimensions of the *Imperator* have made possible the construction of three great decks, two of which are partially enclosed, thus giving abundant space for physical recreation and outdoor life. The great promenade decks suggest the boardwalks of some popular seaside resort. The promenades vary in width from sixteen to twenty-three feet, while a circuit of the deck is equal to a walk of about five ordinary city blocks. The *Imperator* carries none of the ventilating funnels common to many steamers, thus placing practically the entire upper or sun deck at the disposal of her passengers, even the space occupied by the life-boats carried on these decks being available in fair weather, when the boats are swung outboard to broaden the promenade.

There are large and completely equipped gymnasiums aboard for both the first and second cabins in charge of experienced attendants. The equipment includes the electrically driven Zander apparatus, in addition to punching bags, chest weights, etc.

There is certainly no lack of opportunity to keep clean, as there are no less than 220



THE RUDDER WEIGHS 90 TONS. THE CAST STEEL RUDDER POST IS 2½ FEET IN DIAMETER, 57½ FEET HIGH AND WEIGHS 110 TONS

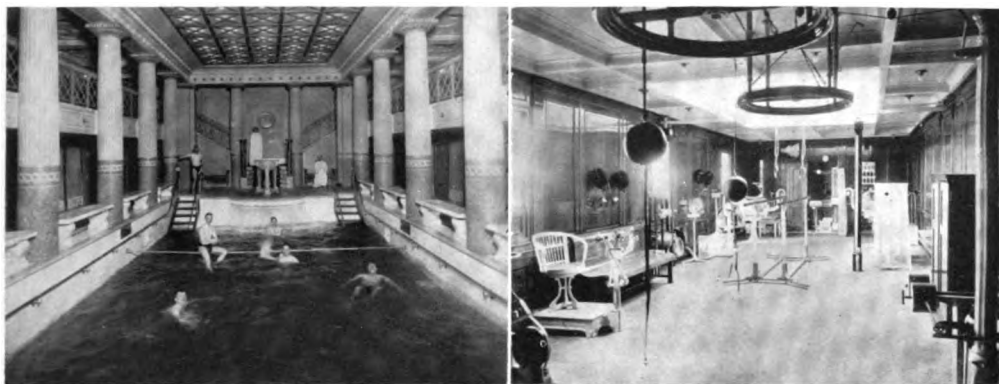
baths in the first cabin alone. The most original feature in this category is the sumptuous Roman bath, reproducing with great fidelity the great Pompeian Hall in the Louvre Museum. The main saloon, elaborately carried out in bronze and marble, measures 65 feet in length and 41 feet in width and extends over two decks. The pool, which is surrounded by decora-

tive Pompeian pillars, measures 21 by 30 feet with a maximum depth of 9 feet, providing ample room for diving, swimming, and water sports. One particularly lively game of water polo was played on the trip over, the contestants being watched by a crowd which filled the galleries to the utmost. Surrounding the pool is a series of special baths with steam baths, massage rooms, tempering rooms, warm air rooms, hot air rooms, resting rooms, water cure rooms, electric baths, mineral baths, needle bath, foot bath and shower bath. A staff of barbers, chiropodists, manicurists, hair dressers and masseurs are in attendance.

For the average traveler the staterooms constitute what is perhaps the most attractive feature of the *Imperator*. Lately certain department stores in New York City have been showing two-story beds, or berths, for use in very small and crowded flats. Just when New Yorkers are being forced to adopt the plan which has so long been in use on shipboard for economizing space, the newest and largest of the ocean liners is replacing them, at least in the first cabin, by brass bedsteads of attractive design. Each room is supplied with a marble washstand with hot and cold running water, and the convenience of passengers has been anticipated in the placing of mirrors, dressing tables and electric lights. In the first cabin alone there are 714 fixed beds and 194 sofa beds and reserve beds, while the three cabins accommodate 2,496 passengers. It is only twenty-five years since the first staterooms with private baths appeared upon an ocean steamer.

The *Imperator* has a large number of private suites, many of which are extremely elaborate and which afford all the luxury of a home throughout the voyage. The two imperial suites are each composed of twelve rooms, including two bedrooms with private baths and trunk rooms, breakfast room, sitting room, servants' rooms, private veranda and private deck, a kitchen and a pantry, so that the occupants, if they choose, can cross the ocean without once coming into contact with their fellow passengers. All the staterooms of the first cabin are connected through the central telephone station with all parts of the ship.

It is of interest to note that the linen



Brown & Dawson, Stamford, Conn.

THE ROMAN BATH AND THE GYMNASIUM

outfit alone is valued at \$50,000, and includes 30,000 hand towels, 7,500 bath towels, 9,700 bed sheets, 45,300 napkins, 12,500 pillow, cushion and bolster slips, 13,800 waiter's towels and 2,000 linen covers.

The grand saloon of the *Imperator*, which is 65 by 85 feet in size, is one of the most sumptuous apartments of its kind in the world. Its lofty ceiling and the dome above are supported by trusses, leaving the floor entirely unobstructed by pillars. It is furnished in Louis XVI period, the predominant color being old rose. Its walls are hung with Gobelin tapestries, and its wood carvings are of unusual artistic value. There is a handsomely appointed stage at one end to be used for concerts and theatricals, and by removing the furniture and rugs it may be transformed into a spacious ballroom.

The Ritz-Carlton restaurant and palm room is also a magnificent apartment, furnished in Louis XV period, having a high ceiling supported by marble columns, and is lighted by large bay windows opening on the promenade deck, so that guests may sit at the tables and look out over the ocean as if in some seaside hotel.

Doubtless the *Imperator* is the only ship in the world that numbers a gardener among its

crew, but there is a greenhouse on the upper deck, the plants in which grow luxuriantly whatever the weather outside, and there is a flower shop on board which supplies cut flowers in great variety. There is also a candy shop, a book shop, a public stenographer, a photographic dark room, which is for the free use of passengers, and four electric elevators for the benefit of those who dislike to climb stairs.

There are a number of fine paintings on the ship, two of the most notable being the picture of Emperor William II on the main stairway, which is shown in one of the accompanying illustrations, and the palace and garden of King Frederick the Great at Sans Souci, in the palm room.

In the magnificence of her dimensions, the solidity of her construction, the comprehensiveness of the provisions made to prevent disaster and the extent of the equipment to insure the safety of her passengers, in the amplitude of decks and promenades, the spacious comfort of her staterooms, the extent and variety of the appliances for the promotion of health and the provision of amusement, and in the sumptuous magnificence of her grand saloons and dining halls, the *Imperator* is the greatest ship in the world.



REASONS FOR AN INCOME TAX

By CORDELL HULL, M. C.

"A COMPREHENSIVE income tax closely approaches the Golden Rule of taxation; no one can escape his reasonable proportion of taxes. The miser, the sojourner abroad, the holder of hidden wealth, are all caught within its net." So says the author of the income tax provision of the pending tariff bill, who is quite as strongly opposed to a protective tariff as he is in favor of the taxation of incomes. Many who disagree with him on both matters will be interested to get his point of view.

THE American people without exception prize most highly the manifold benefits and blessings afforded by our general government. They well know that it cannot be maintained and these benefits secured to the citizen without incurring the expenses necessary for its administration. Such expenses can only be met by taking the requisite amount from the property of the citizen by some method of taxation.

Governments and States from time to time have adopted and tried out innumerable tax methods with varying success and failure. In the United States both direct and indirect taxes have been utilized. The excise tax has been enacted in many forms—taxes relating to or measured by gross receipts, net receipts, volume of business, amount of sales, transmission of property, interest, dividends, business, trades, occupations, privileges, etc.

Our chief source of revenue from indirect taxation has been the tariff tax levied at the custom house. This method has resulted in many abuses. It has been grossly unequal, inequitable, and unfair, both in its terms and effects. Under its operation not all the property taken from the people goes into the national Treasury; on the contrary, the bulk of it goes to the manufacturer in outright violation of the entire meaning and purpose of taxation.

The States and their political subdivisions have experimented for generations with the general property tax system, but its gradual breaking down and practical failure, with few exceptions, is noticeable during recent years. Perhaps intangible personalty escapes taxation to the extent of 85 or 90 per cent. of its total. Much less than one-half of the

value of realty is reached for taxes. The citizen will disclose and personally return but a minor portion of his property for taxation. Such evasion and unequal assessments handicap the revenue and impose undue burdens and hardships upon honest taxpayers. The result is that most of the States are earnestly casting about for new tax systems.

The sum total of tax conditions in this country is that the masses of the people who are least able to do so are compelled to pay the chief portion of both federal and state and local taxes. They pay about all of our \$312,000,000 of internal revenue taxes; they pay by far the greater portion of our one to two billion dollars of state and local taxes. Other governments likewise have found themselves confronted with similar unjust tax laws and unequal tax burdens. In their efforts to effect improvements in their respective fiscal policies, the great end always sought has been to devise a tax that can be imposed according to ability to pay and to the benefits received, thereby equalizing the tax burdens, that will be certain, and will readily respond to changes in rates, thereby affording the government a productive and flexible system of revenue. The method of taxation evolved from centuries of legislation and agitation throughout the world that most nearly approximates the requisites just stated, is a tax imposed upon incomes.

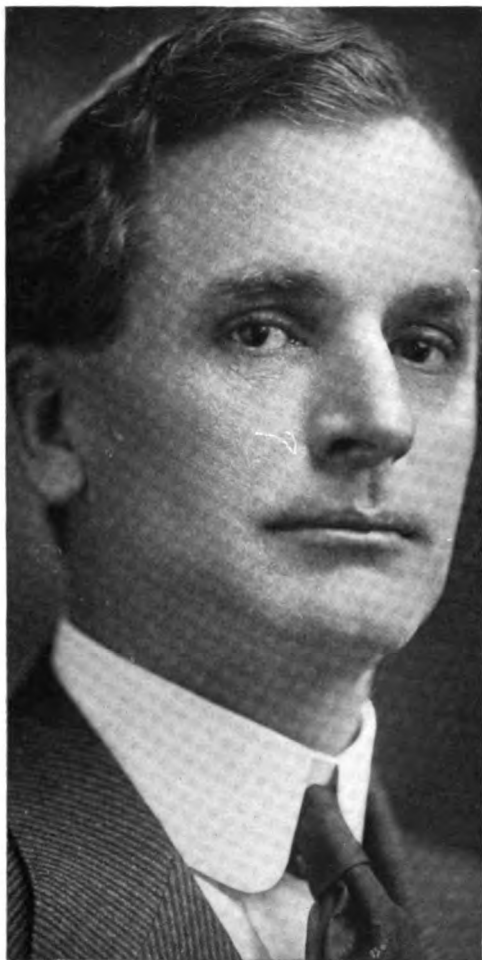
Long experience everywhere has demonstrated that this method affords the only means of reaching the financial resources of the country in fair measure and compelling every citizen to pay taxes according to his ability. A comprehensive income tax law closely approaches the Golden Rule of taxation: no one can es-

cape his reasonable proportion of taxes. The miser, the sojourner abroad, the holder of hidden wealth, especially intangible personalty, are all caught within its net.

More than 150 countries and states have adopted this tax, and generally for the two-fold purpose of raising revenue and equalizing tax burdens. Whenever given a reasonable trial it has never been repealed, save in the United States, and this repeal was effected as an efficient means of perpetuating a system of high and extortionate protective tariff taxation. Naturally this tax is about to be restored in this country as one of the chief means of ridding the people of the odious and inequitable features of our present protective tariff system.

A contest has been waged in the United States for more than twenty years in behalf of this tax; to secure it the people overturned a decision of the United States Supreme Court by writing an amendment into the Constitution. The income tax is here—and to stay. This tax, at all times affording a substantial amount of revenue, combined with our present internal revenue taxes, and also the tariff taxes revised to an honest revenue basis, will give the United States a new and modernized fiscal system unexcelled by that of any other country. More nearly than any other, it will afford justice in taxation, flexibility and stability of revenue, and economy in expenditures.

Being but little more than 100 years



Harris & Ewing

REPRESENTATIVE CORDELL HULL

old, this tax has not yet been fully developed with respect to all its features and possibilities; furthermore, the social, industrial, and business conditions differ in different countries, so that certain features would operate well in some countries, whereas different or modified provisions might be required in others. The proposed income tax measure now pending in Congress was drafted in the light of the provisions and the effects of the operation of similar laws in other countries, and also in view of the present needs of the treasury, and of its effect when combined with our other national tax laws. Some of the chief features of the pending measure are:

1. The subject of the tax, viz.: The net income of individuals and corporations.
2. The rates, viz.: The normal tax of 1 per cent. upon the net income of individuals and corporations, and also the additional tax of 1, 2 and 3 per cent. upon the total net income of individuals derived from all sources, corporate and otherwise, in excess of \$20,000.
3. The exemption, which is \$4,000 as to the normal tax upon individuals.*
4. The methods of collection, which embrace assessment by personal return of the individual taxpayer, and the withholding and deduction of the tax at the source of the income and its payment to the government.

*EDITOR'S NOTE.—The bill as reported to the Senate makes the exemption only \$3,000.

5. The combination of the corporation tax with the normal tax imposed upon individuals.

Under the operation of income tax laws, incomes are both the subject and the measurement of the tax. The law might require the tax to be measured by the estimated income of the current year, or of the preceding year, or the average of the three preceding years, or the actual income of a given year might be made the basis of the tax for five or some other number of future years. The proposed law would measure the tax by the actual net income of the preceding calendar year, as to individuals, but allowing corporations to fix their own fiscal years.

Objection has been offered to the proposed exemption of \$4000, upon the

theory that the large majority of persons will be exempt. This objection would be tenable if the income tax were intended to operate alone, but it must be borne in mind that it will only be one of a combination of taxes, the incidence of each being different.

The scientific income tax would be an accurately graduated tax with its lowest rate applying to the income just above that required to support an average family. In view of the fact that the great bulk of our more than two billion dollars of government, state and local taxes is now paid by citizens whose in-



"THIS MEASURE WOULD IMPOSE THE TAX UPON FOUR CLASSES OF INDIVIDUALS, VIZ.: CITIZENS OF THE UNITED STATES RESIDING AT HOME; SUCH CITIZENS RESIDING ELSEWHERE; ALIEN CITIZENS RESIDING IN THE UNITED STATES; THE INCOME OF ALIEN CITIZENS RESIDING ELSEWHERE DERIVED FROM PROPERTY OWNED AND BUSINESS TRANSACTED IN THE UNITED STATES."

comes are under \$4000, it was not deemed unfair to fix the exemption for the present at the latter figure. Later, when the new law becomes generally understood and adjusted to the country and taxes are better equalized, or the needs of the Treasury greater, the exemption would naturally be lowered to something like \$2000 and special deductions allowed according to the size of the family, the number of indigent relatives being supported, and for premiums paid on life insurance, etc. The proposed exemption of \$4000 would embrace these latter without special mention thereof.

Furthermore, the government needs only \$100,000,000 additional revenue at this time. These, among others, afford the chief reasons for inserting the proposed rates and exemptions in the pending bill. These rates can easily and quickly be raised or lowered by Congress during any year, according to the needs of the Treasury, without business disturbances such as tariff changes occasion.

This measure would impose the tax upon four classes of individuals, viz.:

1. Citizens of the United States residing at home.



- 2. Such citizens residing elsewhere.
- 3. Alien citizens residing in the United States.
- 4. The income of alien citizens residing elsewhere derived from property owned and business transacted in the United States.

There are conflicting opinions as to the best method of assessing and collecting this tax upon individuals. Many countries prescribe the system of personal return of income by the taxpayer by methods similar to those employed in the general property tax systems of the States.

In countries where the citizen offers little objection to drastic administrative provisions containing rigid inquisitorial features this method is most frequently adopted; in countries like England, Italy, Spain, and others, a far more desirable and efficient method of collecting the tax has been devised, viz.: collection at the source of the income. The experience of England has been that this method doubles the amount of revenue received under a given rate, and at the same time largely avoids complaint against inquisitorialness. This one feature, according to



the unanimous report of a recent Parliamentary commission, has done more than all others to popularize the income tax in England and secure the maximum yield of revenue.

In substituting, in part, a tangible for an intangible tax in this country, the average citizen would naturally be more inclined to resent the degree of inquisitorialness required to compel him to make a personal return of his entire income. Furthermore, the fact that we have almost 300,000 corporations in this country would greatly contribute to the success of col-

lection at the source. It was therefore deemed wise from every viewpoint to insert this method in the proposed law. It would apply only to the normal tax of one per cent. imposed upon individuals.

This tax would be withheld and deducted at the source of the income derived in the main from the following sources: Fixed annual income exceeding \$4,000 from rents, interest, salaries, partnership profits, and royalties.

It is thus apparent that income accruing to an individual at irregular times through the year and in uncertain or indefinite amounts, or even fixed annual income under \$4,000, would be returned by the individual taxpayer himself for assessment and payment of the tax. It was found necessary to make one exception to the above rule of assessment and payment of tax at the source; this relates to the individual income derived from interest upon corporate bonds or mortgage indebtedness.

The total amount of corporate indebtedness in this country exceeds \$30,000,000,000; the interest thereon would probably exceed \$1,250,000,000. The normal tax upon this latter amount would aggregate \$12,500,000. In the neighborhood of 90 per cent. of this interest is represented by coupons payable to bearer, most of which pass current in trade at par. The debtor corporation does not and can not know who owns its bonds or the coupons representing their interest at any given time.

To deal with this situation successfully required the adoption of one of three alternatives: First, to require the debtor corporation or its paying agent to withhold and pay the tax to the government after making due return of such interest income, with the name and address of the bondholder, if known, and in blank if unknown, and permitting the bondholder, then or thereafter, to make claim for exemptions and deductions; second, to require the individual taxpayer and bondholder to make personal return of all interest received from corporate bonds; or, third, to require such individual taxpayer to make such return and require the debtor corporation to report to the government the amount of interest paid to each bondholder, exceeding say \$1,000, accompanied by his name and address.

The latter method was not deemed most feasible because, as before explained, the corporation could neither know nor ascertain the name and address of each bondholder; furthermore, in most cases there would naturally be several reports from different sources as to items of income of each individual taxpayer and it would be difficult, if not impossible, for the internal revenue commissioner's office to locate and assemble these reports for the purpose of allowing proper deductions and computing the total tax of such individual. The second alternative is subject to the same objections that apply to the administration of the general property tax systems of the States, under which not exceeding 10 to 15 per cent of personalty is returned for taxation. The method first mentioned was therefore adopted.

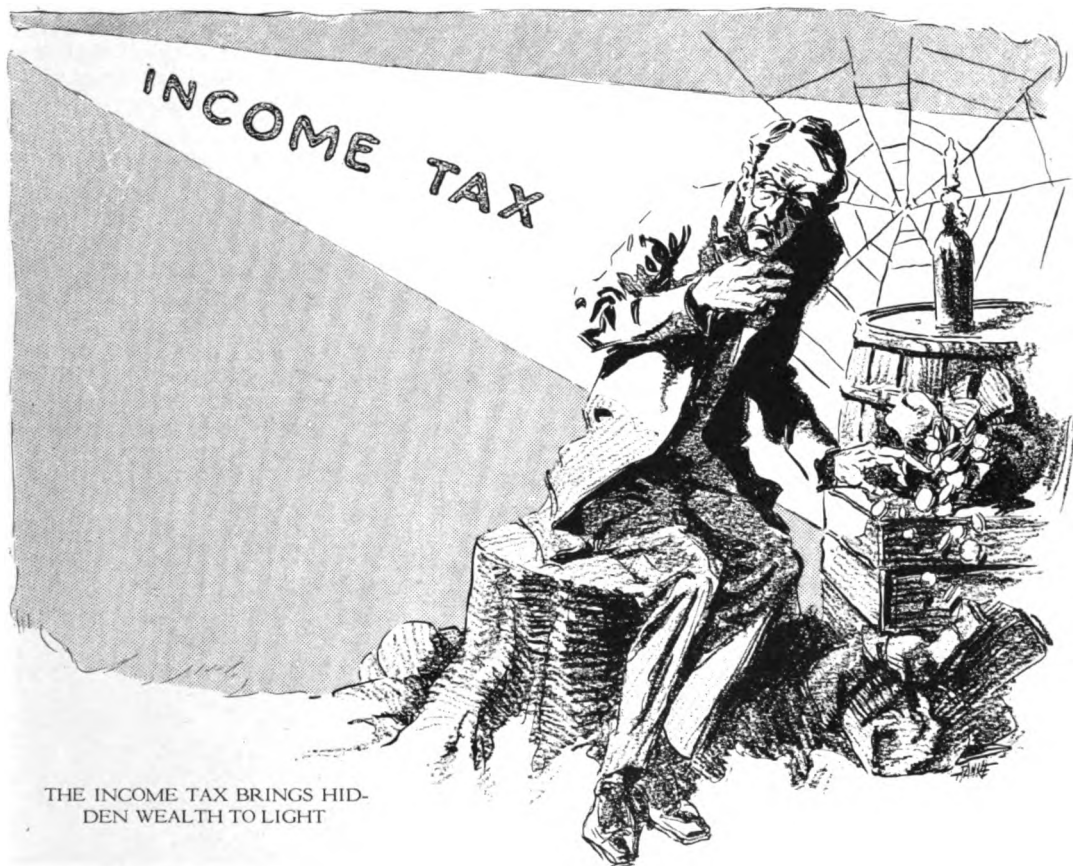
The provisions of the present corporation tax law, in the main, are carried into the income tax bill. This law has been in operation for four years and has become adjusted to the country, is well understood and is working admirably. Some modifications, however, have been made in its provisions; for illustration, the exemption of \$5,000 is omitted, for the reason that corporations do not eat or wear clothes, and besides they are allowed certain deductions for expenses, losses, etc. Again, the tax is, in a sense, graduated *pro tanto* with respect to holding companies and to corporations holding stock in other corporations, the effect of which is that each corporation will be required to pay taxes upon dividends received from other corporations. Another change permits corporations to designate their own fiscal years. The proposed measure is also so worded as to include for taxation a large number of corporations which have been able through the courts to escape taxation under the present law. The measure now pending proposes to tax only business profits of individuals and corporations. Corporations not organized for profit nor conducted for the purpose of pecuniary profit, but for the social, moral, or commercial welfare of their members such as civic or trade organizations, would not come within the provisions of the bill.

This measure can be defended upon every ground of justice in taxation. It is equal and uniform in its terms. If the citizen prospers he would pay tax accord-

ingly: if he should fail to realize any business profits during the year he would not be required to pay tax. No other law has been devised that meets so fully every requirement of a model tax. It is believed that the American people would prefer to experience the slight inconvenience of returning for assessment and paying this tax, the exact amount of which they could see and know, in preference to submitting to an invisible, intangible tax which, though less inconvenient to the taxpayer,

affairs of government. This fact probably accounts for American Independence, as well as for many other great reforms and beneficial changes in governments not confined alone to taxation.

When one admits the justness of this tax, there is no further ground for serious argument against it. Like any new tax law, its administration will involve some care, attention, and patience on the part of the people and the officials of the government. It can easily be administered by



THE INCOME TAX BRINGS HIDDEN WEALTH TO LIGHT

takes from him and transfers to other citizens or corporations five dollars for every dollar that reaches the United States Treasury. This method would likewise induce citizens to take greater interest in the affairs of government and to assist in curbing expenditures. It may be here remarked that while no tax is welcome or desirable on the part of the taxpayer, it is true that a tax has the one virtue of arousing and keeping constantly alive the sincere interest of people in the

extending the present internal revenue force of the government. It is not as inquisitorial as our tariff or internal revenue laws or the general property tax laws of the various States, if the latter are properly enforced. Neither are the provisions of this bill as complicated as many or most of our other tax laws. After one or two years' experience the law will be even more familiar to the people and better understood than most other tax laws.

MOTOR CRAFT OF CHESAPEAKE BAY

By STUART STEVENS SCOTT

*"TIDEWATER Maryland and Virginia have been regenerated. To-day the Chesapeake region is a garden spot. Great truck-patches have taken the place of countless acres of virgin forest and old farms, and it is all due to the gasoline-propelled craft that chug in an endless procession. * * * In a region so interspersed with streams as to make a boat almost as necessary as a horse and carriage, it is natural that the people should avail themselves of a cheap means of transportation over the liquid highways."*

THE Chesapeake region, that area of tidewater land along Chesapeake Bay which divides the State of Maryland and penetrates deep into Virginia, has felt the influence of the commercial motor boat as have few other sections of this country. This may seem a bold statement, and yet statistics will go a long way toward proving it, while even a brief visit will give an optical demonstration.

There are few localities in which so many people make their livelihood from the water as in the Chesapeake region. There may be sections which can boast of having more seafaring men, but in the States of Maryland and Virginia the fishing, oystering and crabbing industries are enormous, giving employment to hundreds of thousands of men, women and even children. In the development of these industries the gasoline engine has played a most important part.

During the comparatively few years that the internal combustion engine has been a commercial factor there has been a vast change and improvement throughout the Chesapeake region; indeed, the gasoline engine has done more for the region than has any other one thing during the past century.

True, the steam engine did its part but, even to-day, although the region is well covered by several lines of steamers that make landings at numerous places on the principal rivers, these craft, owing to their heavy draft, do not begin to cover the territory the gasoline boats reach.

Prior to the gasoline engine the farmers of tidewater land had sailing craft to



depend upon for carrying grain and such cargoes as would not be injured if delayed in transit. Only the farmers close to steamboat wharves could hope to send produce to the cities of Norfolk and Baltimore, and even then in limited quantities, for freight rates were high and steamboat schedules were such as to make the sending of produce risky.

If these conditions prevailed for the farmer close to the steamboat wharf, what about the farmer who was a few miles inland? Simply this: the inland farmer devoted his efforts entirely to the raising of staple crops—wheat, corn and tobacco—and even these in limited quantities, for the cost of hauling and freight charges gave him but meagre profit.

With the exception of the territory immediately along the routes of the steamboats, great sections of Maryland and Virginia were almost a wilderness, and vast areas of good farm lands were practically given away by those who sought a living elsewhere.

Upon the introduction of the gasoline-engined boat there came the upward trend. The gasoline barge, not only of draft light enough to thread the narrow and shallow streams to the very doors of what had been practically inland farms, but sturdy enough to run the open waters of the Chesapeake to the centers of population in only a little more time than could be made by the steamboats, not only encouraged and made possible the raising of market produce, but also enhanced the value of land.

The gasoline engine was directly responsible for the bringing of expert farmers from the West, and these men were quick to see the glowing possibilities in the combination of the kindly soil and the motor boat that afforded quick communication with receptive markets.

Tidewater Maryland and Virginia have been regenerated. To-day the Chesapeake region is a garden spot. Great truck-patches have taken the place of countless acres of virgin forest and old farms, and it is all due to the gasoline-propelled craft that chug in an endless procession.

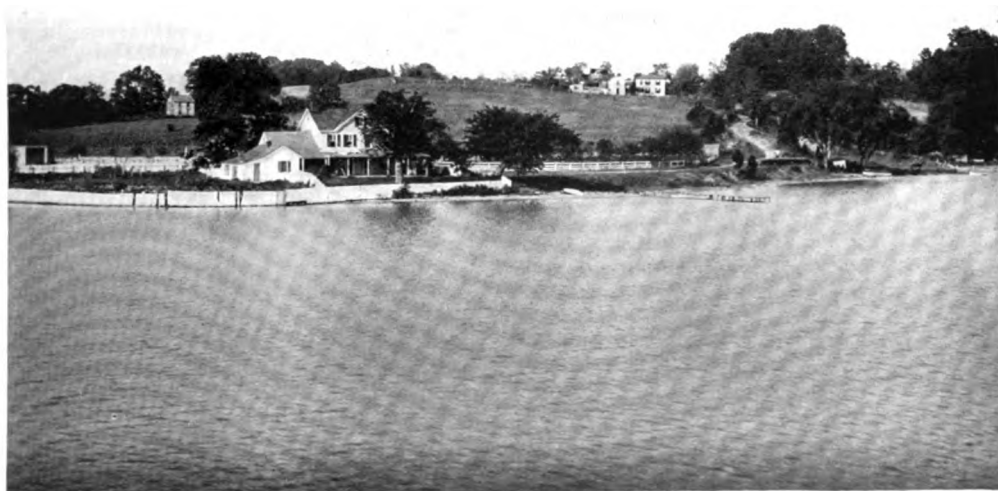
Few, indeed, are the farmers of the Chesapeake region who do not own a motor boat, not as a pleasure craft but as an adjunct. In a region so interspersed with streams as to make a boat almost as necessary as a horse and carriage, it is but natural that the people are only too glad to avail themselves of a cheap means of transportation over the liquid highways.

The best evidence of their willingness is that there are within the Chesapeake region fully 10,000 motor boats, and of these, it is safe to say, 80 per cent. are

used for business purposes. Of course, like the farmer who uses his horse to work on the farm all week and then carry the family to church on Sunday morning, many of the commercial craft become "family wagons" on gala days, such as picnics or regattas. Last summer, when the Chesapeake Bay Yacht Racing Association held its annual meeting at Oxford, there were present a score or more of working craft laden with young people.

There are numbers of farmers, who, when the streams are frozen over, take the engines out of their boats, put them in their barns, and hitch them to saws, corn shellers, etc. I know one man who lights his house and barn with a dynamo driven by a six-horsepower marine engine that was originally in his boat. This illustrates the adaptability of the marine engine.

The commercial side of the motor boat in Maryland and Virginia waters is emphasized in another direction. It has greatly added to the income of those who take summer boarders. While there are no statistics to show the number of sum-



A WELL DEVELOPED FARM ON THE POTOMAC

THE MOTOR BOAT HAS MADE A VAST CHANGE AND IMPROVEMENT THROUGHOUT THE CHESAPEAKE REGION; IN FACT IT HAS DONE MORE FOR THE REGION THAN ANY OTHER ONE THING DURING THE PAST CENTURY.

mer boarders, the Chesapeake region is liberally dotted with summering places, hotels, boarding houses and farms, the proprietors of which make a specialty of catering to city folk. Each summer there are columns of advertisements in the Norfolk, Washington and Baltimore papers, and practically every advertisement carries the word "motor boating," an attraction of almost irresistible strength to old and young from the city who are seeking a few days' recreation.

I said there were fully 10,000 commercial motor boats in the Chesapeake region. I have before me a letter from the Department of Commerce, dated March 18, which reads:

"In reference to the request for the number of boats in the Chesapeake region, this office advises you that the number of motor boats documented on June 30, 1912, at the several ports from Washington, D. C., to Cape Charles, inclusive, were as follows: 14 motor boats

over 50 tons; 587 motor boats over 5 tons; 9,148 motor boats under 5 tons.

"All of these motor boats, with the exception of those under 5 tons, are in commercial use. The 9,148 motor boats under 5 tons include yachts and vessels in commercial use."

The above figures give a total of 9,749 craft a year ago. With the natural increase, and taking it for granted that some were missed in the tally, the round number of 10,000 is not far wrong.

Another phase of the commercial motor boat is its use in oystering and fishing. The gasoline engine has been a heaven-sent blessing to the thousands of men who make their living out of these industries. In the days of sailing craft the men had to start out before daybreak. If there was no wind it meant a row of several miles. Remaining on the grounds until nearly dusk, it was well into the night before they reached home, if they had no wind. Now, with a 3- or 4-horsepower motor in



AN AUXILIARY CHESAPEAKE BAY SKIPJACK

THE SEASON BEFORE HE BOUGHT HIS ENGINE ONE BLOW, WHICH KEPT HIM FROM GOING OUT, CARRIED AWAY \$900 WORTH OF HIS GEAR; NOW IT WOULD TAKE A HURRICANE TO KEEP HIM FROM HIS NET.

their little boats, they are independent of the wind their labors are lessened and their output increased, with no greater time on the grounds.

Down the Chesapeake, in Virginia waters, where fishing is done with pound-nets, the gasoline engine plays a most important part. The pound, or trap, of a net must be emptied of fish every 24 hours, because the fish will not live longer. This is all right in good weather, because the fishermen want to take out the fish every day to get them to market. When it blows and the sea runs heavy the trap must be kept empty, for should there be many fish in it the bulk of them would form a fair resistance to the sea and the chances would be in favor of the trap being carried away. With the trap, most likely, would go a good portion, if not all, of the net, and with it the stakes.

I was at Ocran, Virginia, last summer during a heavy northeaster that sprang up late in the evening. By eight o'clock the next morning it was blowing 30 to 40 miles an hour, and the waves on the bay were seven to nine feet high.

I had an engagement to go out with one of the pound fishermen, and when he arrived at the wharf in his 40-foot skipjack he had an anxious look on his face. He said he would be very well pleased if he could only get out to "spill his trap."

The skipjack was close-reefed and, with its 15-horsepower motor going at full speed, we bucked the sea and wind two and one-half miles off shore. The skipper told me as we hammered along that without the engine he could not have made the trip at all. Asked as to what he would have done without the engine, he replied that he would have "had to take chances on the net staying." Incidentally, he told me that the season before he bought his engine a blow kept him from going out, and that blow carried away \$900 worth of his gear. He declared that the damage was done by reason of the trap being pretty well filled with fish, and that if he could have gotten out and spilled them he would have saved his net. Now it would take something in the hurricane class to keep Mr. Fisherman from his net.

There's another kind of fishing on the Chesapeake in which the motor boat is destined to play a big part, and that is the catching of menhaden. Menhaden fishing



THE LARGER NUMBER OF GASOLINE BOATS THAT TIE UP AT PRODUCE WHARF, BALTIMORE, ARE AUXILIARY—SCHOONERS, BUGEYES, SLOOPS AND SKIPJACKS.

is the most important industry of the region. It outranks even the oyster industry in investment in craft and gear, and even in the value of product. There are 85 steamers as against a dozen gasoliners, but it is likely that before many years the figures will be reversed.

The gasoline engine plays but little part in the oyster industry in Maryland, save in tonging, for the law prohibits the use of any propelling power save sails for dredging craft, and there are about 1,800 dredgers. The majority of the dredgers, however, make use of gasoline engines to work the winders that haul in the dredges, and most of the dredgers carry power

yawls which they use to work in and out of harbor when the wind is light, as it frequently is in winter.

In Virginia, on the other hand, the gasoline boat is used extensively in the taking of oysters, by tonger and dredger. This is due to the fact that the greater part of the bottoms in that State are leased, and the lessees are at liberty to get their oysters by any means they can employ. There are about 30 oyster dredges hailing from Hampton alone.

One class of boats in the oyster business—"buy boats"—in both Virginia and Maryland, but especially in the latter State, has, almost to a vessel, adopted the motor. The buyer is a free-lance. He purchases from tongers and dredgers and takes a chance on getting a profit in the city. If he gets a "jag," as a load is called, at a low figure in fair weather, and then a hard blow or a freeze follows, up jumps the market. The weather has to be pretty severe and the ice heavy to keep the gasoline-powered buy-boats down the bay when the Baltimore market is up. I have seen them come in so covered with ice that they looked more like bergs than boats. They were lured in by the \$—that's the commercial side of motor boating.

Baltimore is the largest city in the Chesapeake region. It is the principal headquarters of the commercial motor boat and within its harbor lines there is to be seen every type of the commercial craft of the motor boat tribe, from boats used by reporters for newspapers to packets that ply regular routes, carrying merchandise and passengers.

There are more packets out of Baltimore than any other of the Chesapeake Bay ports. There are in this class 28 craft of

1,454 tons register. Of general freighters there are upwards of 200, each of more than 20 tons. These boats ply at more or less regular intervals to points within 100 miles of the city, bringing grain, fish, produce, oysters, cord wood, etc., in season, and returning with groceries and general merchandise.

These packets and freighters are of different types, though the more pretentious, like the *Bertie E. Tull* and the *Princess*, which are the largest of all, are more like steamers in general appearance; in fact, for several years the *Tull* carried a huge wooden "smokestack" to sustain the general make-up.

The larger number of gasoline boats that tie up at Produce Wharf, Baltimore, are auxiliary—schooners, bugeyes, sloops and skipjacks. For that matter, some of the barges carry pretty good-sized sails which are spread to fair winds.

Of harbor craft there is scarcely any branch of maritime business that is not carried on with motor boats. The police department, fire department and harbor board each has one. There are ferries, boarding house runners, water boats, ship chandlers' boats, sail makers' boats, boats for ship brokers, boats for hire by the hour and day, tug boats and boats for almost every purpose one can think of. There is now going into commission a 95-foot motor-powered lighthouse tender. The Standard Oil Company delivers fuel with a motor boat; so does the Texas Oil Company.

What good roads have done for inland States the gasoline engine has done for the Chesapeake region and its thousands of miles of waterways. The commercial development has brought prosperity and happiness to thousands of its people.



SOME WONDROUS WATERWAYS

By AGNES GREENE FOSTER

"AFTER you have enjoyed Naples and its history, Venice and its witchery, Rome and Florence and their art, Paris, London, Munich, Dresden, Berlin, Budapest, Vienna, Amsterdam, Antwerp—all along the beaten paths—should your heart long for the sea, leave 'the dull tame shore' and come with me along some waterways I know. Join me at Trieste, and we will sail along old Adria's smaller waterways, which wind in and out among the thousand isles that border the shores of earth's garden beautiful—Istria and Dalmatia."

LOVERS of the beautiful in art and architecture are praying that the overworked phrase—"Out of the beaten paths"—will soon become obsolete. It often keeps the young traveler from making the most of the limited time at his disposal. Think of a first-time, over-sea voyager settling down at Montreuil or Bruges—beautiful as they are, with their artistic atmosphere—and not seeing Paris with its Louvre!



border the shores of earth's garden beautiful—Istria and Dalmatia. You may not have been taught so to call the southern and southwestern coast of Austria in your geography days, but thus they are named. Just as the Tyrol is Austrian, so Istria and Dalmatia are both parts of Austria.

It is not the call of the shore that you hear, but the call of the world's wondrous waterways, for it is the water

All great waterways of earth are beaten paths—and much that is greatest and noblest in art and architecture is found along them. Let not the first voyagers, then, be afraid of anything, much less of these same abused beaten paths; nor yet of being called "tourists." Think of the hungry hearts longing to see God's beautiful waterways. "Be not afraid" was taught us even before "Judge not;" therefore give I a new precept unto thee, O, first voyager: "Be not afraid, and judge thou not where thy fellowman goeth! Go thou wherever the blue waterways will carry thee, and where thou canst imbibe most within the time allotted thee."

After you have enjoyed Naples and its history, Venice and its witchery, Rome and Florence and their art, Paris, London, Munich, Dresden, Berlin, Budapest, Vienna, Amsterdam, Antwerp—all along the beaten paths—should your heart long for the sea, leave "the dull tame shore" and come with me along some waterways I know.

Join me at Trieste, and we will sail along old Adria's smaller waterways, which wind in and out among the thousand isles that

that makes these shores so bewitchingly beautiful. When you board the yacht at Trieste, get your belongings together below at once—let them be as light and as compact as possible—and select a place well forward on the land side of the boat in order that you may not miss one iota of the loveliness which is awaiting you.

From the very moment that you set sail you will think it must be a high carnival day, but it is so every day. These greenish-blue waters are filled with odd-shaped sailing craft which, with the brightly garbed sailors and the ever-varying background of the shores, make a picture not easily forgotten.

The Italians were past masters at building colossal masonry along their waterways, and, whilst Istria and Dalmatia are now Austrian, all their waterways, harbors and piers bear the hall-mark of Venetian or Roman construction and ownership.

As you approach the Bay of Pirano, you will descry a beautiful bit of this old masonry while still far out at sea. You will feel its massiveness before you detect the cathedral it supports or the mighty

pressure of ocean waves it holds back from the terraces upon which Pirano is built, or, I should say, to which she clings, for thus it seems as you glide into her exquisite bay.

This one bay, this loveliest of waterways, with its multitude of lateen sails made of every shade of orange and always patched with sepia-colored canvas—old Adria's sons would scorn a patch of white or blue which would break the harmony of this scheme of gold—this one bay, I repeat, will repay you for whatever vicissitudes you may have undergone to reach it.

The words "Bay of Pirano" will ever thereafter bring to your fancy a dream of loveliness, a vision of colorings which can never be effaced from your memory. All that is enchanting in tones of pink is found in Pirano's roofs, and her walls bear the tints of old ivory. As these exquisite colors are mirrored in the pale green waters, it seems that all of Adria's subtle splendor has been poured into this charming Bay of Pirano. Even the mountains vie with the sea, for they permit no glaring bud to blossom amid the yellowish-green of the olive, the cypress and the vines that cover their terraces.

The secret of all colors soft and hazy deep,
The Angels still must save Pirano's keep.

There is no monotony along these waterways, for, while



THE VILLAGE OF GRAVOSA, WHICH SERVES AS A PORT FOR THE CITY OF RAGUSA, WITH ITS HISTORIC PLANE TREE WHICH HAS BEEN A LANDMARK FOR CENTURIES

each is charming, its charm is all its own and different from any other.

Rovigno has two ports, for Rovigno lies upon a tongue of land extending into the sea. The waterway leading up to the town is most picturesque, for the boats must follow the canal-like channel which winds in and out among the islands that protect the shore.

It was near the port which lies nearest the Islands of Saint Catharine that the old town of Cissa—famous for its purple dyes—was sunk into the sea in the seventh century. The sailors will tell you that this is the reason why the waters of the dream-like canal of Rovigno take on such ravishing tones of lavender.

It is on the droll-looking craft, which seem but idly floating on these pinkish-lavender waters, that the "best wine in all Istria" is loaded and carried to all parts of the globe. Also the "finest hazlenuts in the world" are grown on the sides of Rovigno's hills and are started on their journey by these seemingly lazy sailors. Here, too, is a water view which I feel safe in calling incomparably picturesque.

One of the charms of the narrow canal of Fasana is that it follows the islands where the old Venetians procured the beautiful stone out of which they built their palaces, their bridges and their other wonderful masonry. The smaller craft sail near enough so that you can see huge quarries stretching across an entire island.

Beyond this canal lies Pola; Pola, with its wonderful waterway; Pola, with its two capes, like two huge newel posts—Capo Cresto and Capo Compare—between which you must sail very carefully on entering the mammoth bay which holds the navy of Austria.

You must first enter by night and, as your yacht is carefully picking her way through the mines and around the warships, you will be fascinated by the twinkling of the electric code practice flashed from one ship and answered by another.

But the wonder of wonders in this magnificent



THE HAVEN OF PIRANO, ON THE ADRIATIC

HERE THE VENETIANS CONQUERED THE FLEET OF EMPEROR FREDERIC BARBAROSSA IN 1177. "ALL THAT IS ENCHANTING IN TONES OF PINK IS FOUND IN PIRANO'S ROOFS, AND HER WALLS BEAR THE TINTS OF OLD IVORY."

bay of Pola is an amphitheater which seems suddenly to rise out of the waters after a quick turn around a mine, and into the sides of which you will think your boat must surely crash.

You will disembark here, for Pola has much historic interest, and, besides, you must sail away by the morning light. Pola was a war harbor so long ago as 187 B. C., and under Augustus' rule was known as "Pietas Julia." Several superb Roman buildings remain, besides the stately Arena. This amphitheater is 78 feet high, 345 feet in diameter and held 20,000 spectators.

I doubt if in the whole world there is another harbor so intensely dramatic as is this one of Pola! A harbor, large enough to hide away the navy of a powerful nation; with an arena 2000 years old still standing on its water's edge; with a stone jetty of colossal dimensions under construction; and yet one about which few have heard, much less seen.

Hereafter Pola will be better known, since the eyes of the world are turned toward her because of the recent Turkish-Balkan War. It is as you sail away in the bright sunlight, however, that the overpowering magnificence of this Istrian panorama spreads itself on each side, before and behind you. You will wish to remain here and revel in this one glorious waterway! But the south holds even more for you than this, and will entice you on to Dalmatia.

Dalmatia is the jeweled band of shore line, which aids the Adriatic Sea to drop exquisite bits of turquoise and sapphire along the southwestern coast of Austria. This emerald ribbon has for a background the Dinarian Alps, which is the golden chain that holds the gems in place. It is pinned to Austria on the north by the Gulf of Quarnero and ends at the south in four glorious pendants—the fjords of Cattaro.

The slow mail steamers enable you to

see more of the smaller waterways, since they stop at all the island towns as well as the larger ones on the mainland, and must of necessity wend their way through the labyrinth of magical sea paths.

The warlike spell of Pola is not broken until your craft turns her bow into the sheltered harbor of Lussin-Piccolo. The bay of Lussin is wedge-shaped and seems to pry the island of Lussin into two parts, thus staging Lussin-Piccolo on an amphitheater bordered by two pretty quays which join at the apex of the wedge of water. This canal has so fascinated lovers of the beautiful, both picturesque and climatic, that they have turned this humble little fishing village into a fashionable winter station. In truth, this is so of all these lovely waterways which flow from the Adriatic.

What wonder, then, that the ancient Venetians loved and beautified these waters. This one wee bay, almost unknown to us, was the "Val d' Augusto" in that beauty-loving Emperor's day, and by some perverse exchange of meanings, Lussin-Grande, a smaller village about two and one-half miles south, is no less amiable as to tranquility of climate than its larger sister with the smaller name.

The scenic effects become more fairy-like and the smaller canals more alluring, as you leave that part of the Adriatic known as the Gulf of Quarnero. The air is softer and more tempered as you approach the south.

Along all these waterways are gardens filled with myrtle, with laurel, with fig, lemon, orange and eucalyptus trees which reflect their yellowish green in the blue waters. The canals, fjords and bays reflect all the features of their island shores, even to the colorings of the odd vestments of the natives. It is along the quays of the Canale di Zora, however, that the fancy-dress-ball appearance begins. Here, too, are some magnificent specimens of the masonry which ornaments so large a part of these waterways.

Somehow the broad marble steps leading from the boat landing of Zara up to its broad stone promenade along the quay seem whiter than at any other port. It may be that the yellow, blue, red and green petticoats, the velvet girdles and the white caps help to intensify this whiteness, but surely it all seems cleaner

and more dazzling than the quay of any other waterway.

The same gaily colored costumes mingle nonchalantly with the white flannels or the lingerie gowns of the visitors as the endless stream of humanity passes to and fro between the beautiful, large, white pillars topped with the winged lion of Venice, which form the gateway at the top of the marble steps—for "*all the world*" comes down to see you arrive.

Then, too, Zara is the capital of Dalmatia and vies with Ragusa in the series of *tableaux vivants* constantly appearing on its quay.

Nature, too, seems trying to outdo poor mortals, for, as you turn into the Canale di Sebenico, you suddenly find before you at a turn in the waterway a mountain crowned by a fortress and flanked by three castles and a splendid cathedral. From any one of these points you can impress on your memory a noble vista of waterways, of islands and of old Adria in the distance.

You must disembark at Sebenico and drive to the Falls of Kirka. This drive will take you into the solitude of inland Dalmatia, whose somberness will act as a foil to the splendor which awaits you on the fringe of your next water path.

Spalato is rich in waterways, for she lies picturesquely encircled by mountains washed on the north by the Canale di Castelli and on the south by Canale di Spalato.

Spalato is a town built within the walls of Diocletian's Palace. This sounds like old mythology, for Diocletian always seems like a relative of Diana or Cupid until one sails up to his "really truly" palace and learns that he was the son of a slave and was born in Dalmatia.

The history which was made when the outcast people of Salona, in 639, escaped from their beloved city—then in ashes—and were refused succor by their island neighbors, for whose protection they had fought time and time again, is being repeated to-day, not far from her very door. But they bethought themselves of the stronghold of Diocletian's Palace, sought and found shelter there and built their new town within its fortress walls. You may sail right up to the facade of the palace, and as you sail you can easily descry, towering above the orange market,

the fruit stalls and cafes, a long row of noble Doric columns.

The Bella Vista which surrounds Ragusa, the Queen of Dalmatia, begins as you enter the harbor of Gravosa, for the

separate republic, but it is the sea—oh, the beautiful sea—that made, and still makes, her beauty so ravishing and her history so noble.

The massive walls of Ragusa, against



RAGUSA'S FORTS CROWN A GREAT ROCK WHICH RISES BOLDLY FROM THE SEA

dangerous rocks in the bay of Ragusa, which make it so magnificently beautiful, forbid the entrance of any large steam craft.

This Queen of the Adriatic was once a

which the waves have washed for centuries, still stand far out into the water. This superb waterway, seen from her ramparts or her mountain background, is almost as glorious as her past history; but



THE CITY OF RAGUSA, ONCE A SEPARATE REPUBLIC

ITS SITUATION AND ITS UNDISTURBED ATMOSPHERE OF ANTIQUITY COMBINE TO MAKE RAGUSA BY FAR THE MOST PICTURESQUE CITY ON THE DALMATIAN COAST. ITS SEAWARD RAMPARTS RISE DIRECTLY FROM THE WATER'S EDGE.

the acme of nobility and of wonder is not achieved until you have reached the Bocche di Cattaro.

Here are four fjords which seem to have been carved by the waves of the sea out of the imposing Montenegrin mountains, whose walls in places tower to a height of more than a mile above the lovely waters lying at their feet. These basins are large enough to hold all the navies of the world. Each fjord is connected with the next by a tiny strait, so narrow that it seems impossible for the boat to turn without dashing into the sides of the mountain.

Castelnuova will greet you first, and its enchanting picturesqueness will never be effaced from your memory. A mediæval fortress, whose walls have been cracked by earth- and waterquakes, but now overgrown with vines, guards the entrance of the Bocche and will smile you a welcome.

Every inch of these most wonderful waterways on earth is imposing. Here, away from the sight and almost from the knowledge of men, at the end of the largest of these fjords, lies Cattaro, the gateway to Montenegro, nestling down at the foot of these black mountains on the breast of this silvery water.

You will take a carriage, or a seat in the

"Armored motor car," from Cattaro and will climb the zigzag trail up the mountain and down on the other side, to the bed of a dried mountain lake, where lies Cetinje, the capital of Montenegro. This trail is one of the finest pieces of engineering in Europe, especially on the Austrian side, and you will be awed into silence as you climb and climb.

At first only the bay of Cattaro, with its wall of mountains, is seen; then, as you climb, two of the fjords come into view, and, as higher and higher and up and up you go, you will see all four, now only blue specks of sparkling water far below, each encircled with its wall of mountains, and, far out in the blue mist, the ever beautiful Adriatic.

At the top, in a purple glow, you turn, with miles of mountain peaks at your feet, and begin the descent to poor, brave Cetinje. As you pass through the rocky, barren country, you will be saluted at every step by its sons, the bravest, noblest race of men on earth, who are fighting for their poor little patches of ground against all the wealth of Europe. This, too, sounds like mythology, but unhappily it is being enacted in these so-called *enlightened* days of the twentieth century.

THE CONSERVATION EXPOSITION

By DON CARLOS ELLIS

"THE old looked backward, the new look forward; the old were solely material, the new are essentially moral; the old were proud boasts of accomplishment, the new are a signpost to progress and an assurance of perpetuity. Other expositions have been as songs of achievement at the end of a good day's work; this will be as a living and tangible promise of a still more glorious tomorrow foreordained by the wise action of to-day." So Mr. Ellis characterizes the coming National Conservation Exposition at Knoxville.

JUST outside the city of Knoxville, Tennessee, two picturesque little lakes nestle between the foothills of the Great Smokies, and in the distance range after range of forest-covered mountains lift their crests to the sky. Twelve years ago a young Southern idealist stood upon one of the knolls overlooking these lakes, and dreamed of a great exposition builded upon the slopes about him and devoted to the development of the great resources of the Southland. To-day, stately columns and arches and great buildings are rising around the lakes, roads and pathways wind in and out between masses of flowers and shrubs, a beautiful park is taking the place of the woodland, the exposition is a reality, and the young idealist, in the person of its Director-General, has materialized his dream.

The National Conservation Exposition, for such is the result of the dream and of the dreamer's work, will open its gates on the first day of September of this year to show to the people of the Nation the natural riches of the South and how they may be best used and maintained.

The South is now in the dawn of a great industrial awakening. Its agriculture and its manufactures are advancing as never before, its mines and its water powers are at last receiving due recognition from the commercial world, and it is still maintaining its lead of all sections of the country in the products of its forests, which it has enjoyed for many years. This year or next will see the completion of the Panama Canal. The event will mean more to the



Harris & Ewing

Southern States than to any other part of our country. The commerce which will follow will quicken the already awakened industries. And the Exposition comes, at this most opportune time, to increase and crystallize these influences and to perpetuate the advantages which they create.

The opportunity is ripe for a more wide spread application of the principles of conservation. The resources of the

Southland are undergoing renewed development, and that development should be directed along wise lines, so that those natural riches, instead of being wrung out of the Southland in a few short years of hothouse prosperity and the country left poor and barren, may rather be made permanent sources of wealth which will bring prosperity alike to this and future generations. Economic and scientific treatment in the use of the riches with which nature has endowed mankind, liberally but not in inexhaustible quantities, is not opposed to present-day progress. On the contrary, it makes for sound and healthy advancement. But it is opposed to extravagance and wasteful exploitation, which leaves the country and its people poorer than before.

These are the lessons which the Knoxville Exposition is designed to teach, and to teach in a new way. The wonderful and far-reaching propaganda for the advancement of American conservation which the past few years have witnessed, has been largely one of precept. The Exposition is to teach the same truths by tangible, visible examples of what may be accom-



IN THE GROUNDS OF THE NATIONAL CONSERVATION EXPOSITION, ALREADY A SEMBLANCE OF THE BEAUTY OF THE FINISHED EXPOSITION IS TO BE SEEN. THE ARCHITECTURE OF THE BUILDING IS A PLEASING SETTING. THE PARK IS ONE OF BEAUTIFUL VISTAS, EACH ARTISTICALLY TERMINATED.

plished and of actual accomplishments, and thereby will reach thousands whom the spoken and written campaign has failed to impress.

The work of the Exposition has been divided into the six great departments into which natural resources logically fall; namely, soils, forests, waters, minerals, animal life, and human efficiency, including health, child welfare, home economics, education, rural life improvement and good roads. The keynotes of the exhibits in these various departments will be efficiency and the elimination of unnecessary waste, whether it be in the forest or coal mine or especially in the lives of our people. The saving of human energy will occupy as important a place as the conservation of mechanical energy and of the raw materials which grow in or are dug out of the earth. Exhibits which will help to lighten the work of woman in the home and lessen the number of her footsteps and the drudgery of housekeeping will have an equal place with those showing effective and economic methods in the industry. A few isolated examples must here suffice to illustrate

the character of the exhibits which are to be shown.

Under the department of soils, the most modern developments of agriculture are to be exhibited in a building devoted entirely to soil resources, the Land and Agricultural Building. Probably the largest bas-relief map ever constructed will occupy the center of this structure, a mammoth model of the Southern States, measuring 30 by 80 feet. It will show contours in actual relief, the location of towns and cities, rivers containing actual running water, roads, bridges, and railroad lines. It is planned that the State Experiment Station will occupy appropriate places around the gallery of the building, from which a bird's-eye view of the model may be had. Supplementary to the exhibits in this building will be a model farm of several acres. Upon this will be displayed the latest machinery and the application of proper methods in every farming operation. The Tennessee Experiment Station will operate this farm.

A striking exhibit in the Forestry Building will be a working erosion model, erected by the United States Government



TO OPEN ITS GATES SEPTEMBER 1, IN KNOXVILLE, TENNESSEE

FORM AND IMPRESSIVE, AND THE BORDERS OF THE PLACID LITTLE LAKES AROUND WHICH THEY ARE GROUPED AFFORD A MOST OF THE PALATIAL BUILDINGS OR LOST IN THE DISTANT, VANISHING MOUNTAIN RANGES.

to demonstrate the effect of deforestation on stream-flow and surface conditions. The Government exhibit in this building will lay stress upon the new national forests being established in the Southern Appalachians. One of these new forests is situated in the heart of the Smoky Mountains, a few miles from Knoxville, and special excursions will enable Exposition visitors to see, at close view, the beauties of these forest-covered mountains of Dixie.

Particular attention is to be directed to the human side of conservation, and the exhibits pertaining to health and child welfare will probably excel anything of the kind ever shown in America. An entire building is to be devoted to children. The exhibits for the Children's Building are being prepared under the direction of Miss Julia C. Lathrop, chief of Uncle Sam's Children's Bureau. Prominent among the school exhibits will be a model two-room rural school, provided with adequate and modern equipment for work in manual training, home economics, and agriculture. The plans for this demonstration school are being drawn by the United States Government's expert in

school hygiene, Dr. F. B. Dressler, and will be used by actual classes in the Knoxville schools holding demonstration sessions, a veritable living exhibit.

Commercial exhibits will also be present, but will occupy the same high plane, and none will be admitted which are not in keeping with the principle of conservation as illustrated by the purely educational displays. A fair example of their type is the exhibit of a large Northern manufacturing company which has contracted to show by moving pictures and in other ways what its factory is doing for the health and educational advancement of its employees.

The personnel of the forces working for the Exposition could not easily be excelled. The various committees are made up of State and Federal Government officials, college professors, and other acknowledged authorities in their different lines of work. Behind these are the members of the National Advisory Board of the Exposition, at Washington, with whom the exposition idea originated, who selected Knoxville as the site of the Exposition, and who are responsible for its plans.



GAY DECORATIONS BY DAY AND BRILLIANT ILLUMINATION BY NIGHT

OPEN AIR CONCERTS WILL BE GIVEN DAY AND NIGHT. FLOWERS AND MUSIC BY DAY AND LIGHTS AND MUSIC BY NIGHT WILL VIE WITH EACH OTHER IN THE VISITOR'S ENJOYMENT.

Each department of the Exposition is represented on this Board by one or two members. In addition there is a State Board in each Southern State to represent the Exposition and cooperate in securing suitable exhibits and a large attendance.

For a southern exposition, devoted to the conservation of resources, the location of the Knoxville Exposition is ideal. The mellow beauty of the rolling mountain country in which it lies is of itself sufficient to attract the visitor. The mountains of the West are more grand and awe-inspiring, but, in beauty of rounded contour and harmony and brilliancy of coloring, especially in the autumn months, are far surpassed by the forested slopes of the Southern Appalachians, the "Land of the Sky," as it has been appropriately called. The French Broad River, picturesque in every mile of its course, leads, within a few hours of Knoxville, to the heart of the far-famed sapphire peaks of Western North Carolina, to Mt. Toxaway, Eagle's Nest, Blowing Rock, and Asheville.

A short run down the banks of the Tennessee brings the visitor to Chatta-

nooga, a center of great scenic beauty and historic interest. There he may ascend, by one of the greatest incline railways in the world, to the summit of Lookout Mountain, from which, on a clear day, seven States may be seen. Here, and upon Missionary Ridge and Chickamauga Battlefield close by, the Government has established a national park to commemorate some of the most thrilling battles of the Civil War.

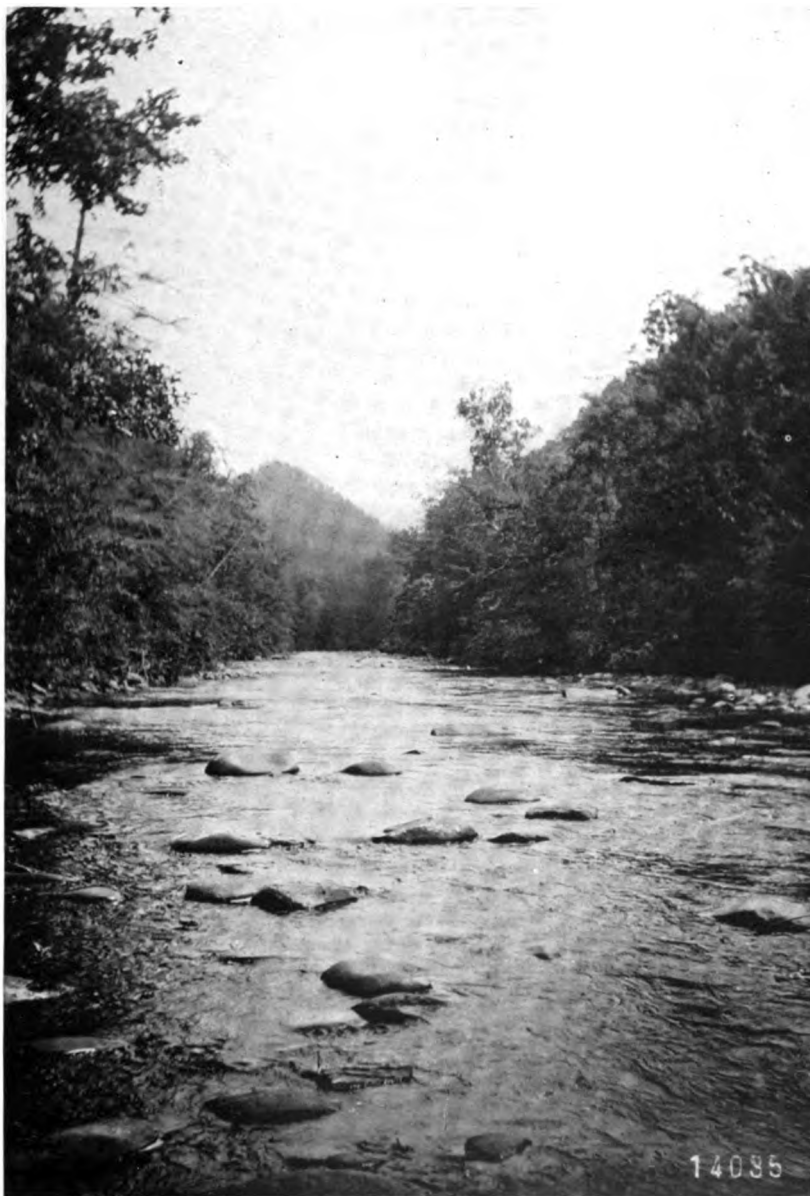
At the very gateways of Knoxville rise the Great Smoky Mountains, named from the fleecy clouds which usually rest upon their sides, and the lovely valleys of the Little River and the Little Tennessee, in the fastnesses of whose heavily timbered headwaters a proud and interesting mountain people have lived and preserved their traditions and even their ancient forms of speech for over three hundred years.

The city of Knoxville lies on the trunk lines of two of the great railway systems of the South and is the terminus of one of them. It has more large cities within a radius of two hundred miles than has any other Southern city, and is most

readily accessible to the entire East. The State in which it lies is touched by nine other States, more than border upon any

corporations bordering directly upon it brings the total to over 75,000.

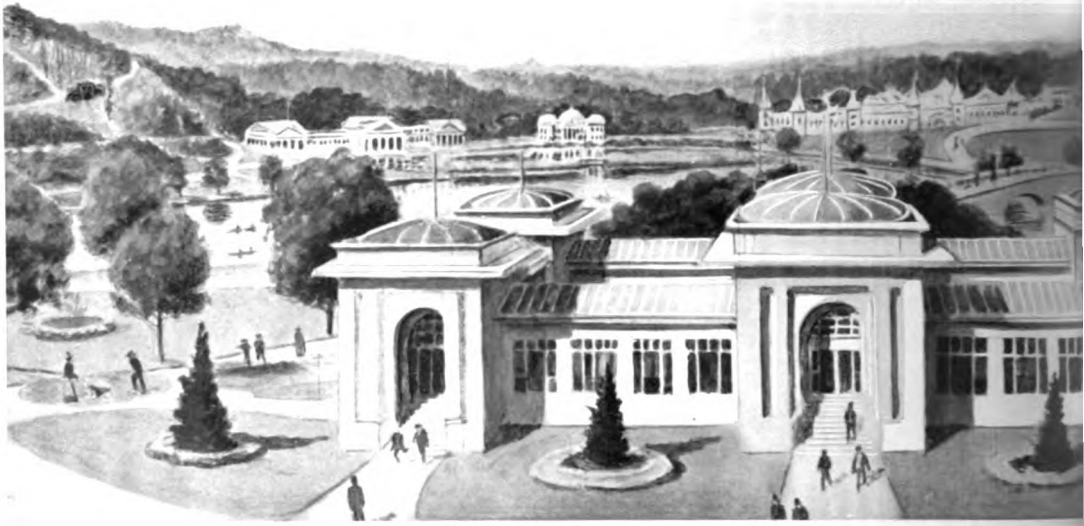
Knoxville is situated within a region



AT THE VERY GATEWAYS OF KNOXVILLE RISE THE GREAT SMOKY MOUNTAINS, NAMED FROM THE FLEECY CLOUDS WHICH USUALLY REST UPON THEIR SIDES, AND THE LOVELY VALLEYS OF THE LITTLE RIVER AND THE LITTLE TENNESSEE

other State in the Union. The city contains five excellent hotels, and while the census gives it a population of only 36,000, the population of the separate

whose resources are so richly abundant and varied that, were the Southern Appalachian country to be cut off from the rest of the world, it could bounteously



FOR A SOUTHERN EXPOSITION, DEVOTED TO THE CONSERVATION OF RESOURCES
AMONG THE FOREST-COVERED

sustain itself and supply every need of its people. Its combination of climate, soils, and moisture is nowhere excelled; it possesses the country's best and largest hardwood timber supply; it has coal, copper, and iron in abundance, and the most beautiful and durable marble in the United States; its mountain streams contain enough water power to light every city, town and village, and run every mill and factory in the Southern States; and within it practically all the important rivers of the South take their rise.

The name "Tennessee" is of Indian origin and meant in the language of Choctaw tribes "The river of the big bend." It is said that the dying Indian warrior prayed to the "Great Spirit" that the happy hunting ground to which his soul was to take its flight would be as beautiful and as plenteous with game as that happy land of "the big bend."

With the opening three months away, the work upon the Exposition is so far advanced that absolute completion on time is assured. Six of the eleven great buildings are finished. These are to be

devoted to children, agriculture, forestry, the negro, liberal arts, and livestock. The Agricultural and Land Building has an auditorium annex with a seating capacity of 3,000. A magnificent bandstand of Tennessee marble is finished, and work upon the East Tennessee, Fine Arts, Woman's, and All-Southern Buildings is nearing completion. The grounds have been laid out and enclosed, and already a semblance of the beauty of the finished Exposition is to be seen.

The architecture of the buildings is uniform and impressive, and the borders of the two placid little lakes around which they are grouped afford a most pleasing setting. The park is one of beautiful vistas, each artistically terminated by one of the palatial buildings or lost in the distant, vanishing mountain ranges. The grounds have been made into formal gardens and the banks of the lakes and other appropriate places are being filled with flowering plants. Much of the original forest has been retained. Trees, singly or in groups, have been left standing here and there to relieve the severe architecture of



LOCATION OF THE KNOXVILLE EXPOSITION IS IDEAL, FOR IT IS NESTLED
 IN THE VALLEYS OF THE SMOKY RANGE

the buildings, and the Forestry Building has been appropriately located on a thickly timbered knoll.

The spectacle of the Exposition grounds at night will be particularly attractive. All buildings will be heavily outlined in electric lights, and the spectator standing at some point of vantage, such as the front of the Forestry Building, on the hill overlooking both lakes, will see the reflection of thousands of lights from their limpid surfaces. Opposite the lower lake from the Forestry Building, Terrace Park, where the purely amusement features of the Exposition are to be grouped, will rise in tier upon tier of gay decorations by day and brilliant illumination by night, from the water's edge to the hilltop.

The entertainments afforded here and elsewhere upon the grounds will be in keeping with the rest, dignified and educational. This will be particularly true of the music, which will be furnished by one of the country's most excellent bands, assisted by European vocalists. Open-air concerts will be given day and night, and upon special evenings festivals, each de-

voted to the music of a different nation. Flowers and music by day and lights and music by night will add to the visitor's enjoyment.

The National Conservation Exposition is to be unique in exposition history. It will be small in size, as compared with the great world fairs, but it will exceed them in the magnitude and importance of its purpose. The great expositions of the past were designed to celebrate past achievement; the purpose of this exposition is the permanent enrichment of the country and its people. As so well expressed in the plans prepared for the Exposition by its National Advisory Board: "The old looked backward, the new look forward; the old were solely material, the new are essentially moral; the old were proud boasts of accomplishment, the new are a signpost to progress and an assurance of perpetuity." Other expositions have been as songs of achievement at the end of a good day's work; this will be as a living and tangible promise of a still more glorious to-morrow foreordained by the wise action of to-day.

A BOURBON EXILE IN KENTUCKY

By COUNTESS SPOTTISWOOD-MACKIN

ON HER way eastward from St. Louis, whither she had been sent by Governor Sulzer, of New York, and the President General of the Daughters of the American Revolution, as a delegate to the recent Peace Conference, the author of "A Society Woman on Two Continents" made a pilgrimage to her alma mater, the Nazareth Academy, and there established the details concerning the asylum found in Old Kentucky by Louis Philippe, last of the Bourbon Kings of France, which are here presented.

THE lurid glare of the French Revolution throws into high relief the personality of Louis Philippe, who took his seat upon the throne of the kings of France to the electrifying strains of the "Marseillaise" and the boom of cannon that had been trained upon the Tuileries.

His early youth was environed in the surging drama of the Revolution, whereof the climax was the beheading of his monarch, Louis XIV, and of Marie Antoinette, and his life was one of many and startling vicissitudes.

The son of Philippe Egalité, Duke of Orleans, and Louise de Bourbon de Penthièvre, and a descendant on his father's side from a brother of Louis XIV, he was a true representative of the autocracy of France. But he was reared to the philosophy and the teachings of Jean Jacques Rousseau and early inclined to the principles of the Revolution of 1789. He came to take an active part in the Jacobin Club, and at the climax of the great civil struggle centering at Paris, we find him made a commandant of the Valenciennes.

When the storm had passed and public opinion ran strong against the royal princes, Louis Philippe was regarded as an accomplice of Dumouriez, and Marat proposed the setting of a price upon his head. He fled to the Alps and thence to Reichenau, where he found humble employment in an academy, under the name of Chabaud-Latour. Later, learning of the guillotining of his father, he assumed the English name of Corby, and, migrating to the German seaboard, set sail for America as a Danish subject.

For four years from the day of his landing at Philadelphia, November 12, 1796, Louis Philippe, as the Duke of Orleans,

found an asylum in "the Land of the Free." Much of this time was spent at the beautiful little village of Bardstown, nestling in the Blue Grass Hills of Kentucky. Here he enjoyed the friendship of the Right Reverend B. J. Flaget, Roman Catholic Bishop of Bardstown, and St. Joseph's Church at that place, since become a cathedral, saw him often in attendance.

Bishop Flaget had met the future king of the French some time previously at Havana, Cuba, and there had raised money to help him and his entourage, which consisted of Louis Philippe's younger brothers, the Duke de Montpensier and the Count de Beaujolais, who, after undergoing imprisonment in France, had lost no time in rejoining him.

The party visited George Washington at Mount Vernon, in 1797, and it was the First President of the United States who planned for Louis Philippe and his brothers an itinerary of travel through the more settled portions of the young country that took them through to Pittsburgh, down the Ohio and into the mountains of Kentucky and Tennessee. The western limit of their tour was reached at Nashville, and on May 13, 1797, they turned northward through the wooded valley of the Big Barren River, resting at a ferryman's on the Green River. They crossed the Salt River at Pitt's Fork with difficulty, and night found them arrived at the inn of a Captain Bean at Bardstown, a settlement of about one hundred and fifty houses and "great expectations."

The personal diary of Louis Philippe brings to light some interesting facts as to the circumstances attending his arrival and sojourn at Bardstown. He was taken

seriously ill, and, although importuned by his brothers to minister to the needs of the distinguished Frenchman, the landlady of the inn could not be induced to forego the attraction of a traveling show that had just reached the town, the first that had ever performed there.

His stay in Kentucky was not without a suggestion of romance. While visiting Frankfort, the State capital, the ducal party was entertained at the Love House, which has ever been associated with Burr's conspiracy, where a gala ball was tendered in their honor. The stately minuet was danced and Louis Philippe invited a young lady to dance with him, but she declined, fearing to wound the feelings of a "plain young man" with whom she had but a short while before declined to enter the minuet. That the loyal maiden made a more than superficial impression upon His Highness is apparent from the fact that, when, three decades or more later, he found himself King of the

French, a gentleman from Frankfort who had known him during the period of his exile, called upon him at Paris. The King enquired for his "Frankfort queen" and chatted pleasantly of the ball at the Love House and the incident of the minuet.

In a centennial ode to the City of Frankfort, in 1886, Major H. T. Stanton, of that place, penned the following verse:

"The Love House stands no longer here
Where, from the crowd secluded,
The cold, ambitious Aaron Burr
His scheme of empire brooded;
But some are mindful of the dance,
In stately grace perfected,
Where once the proffered hand of France
A Frankfort queen rejected."

Upon his return to France and his eleva-

tion to the throne of the Bourbons, Louis Philippe was not unmindful of the kindnesses that had been bestowed upon him while he tarried in the Kentucky hills, and there are still many material evidences of his gratitude to be found about Bardstown. It may, indeed, be said that a potent art influence was exerted in the academic circle of St. Joseph's College at Bardstown, and of the neighboring Nazareth Academy, which is incorporated in the same religious community, by the donation of priceless treasures of painting, statuary and *objets d'art* by Louis Philippe after he became the Sovereign of France. Among the pictures which yet hang in the cathedral church at Bardstown are "St.



Edmonston

COUNTESS SPOTTISWOOD-MACKIN
GOWNED IN THE REGULATION COURT DRESS OF THE VATICAN



THE OLD EPISCOPAL RESIDENCE AT BARDSTOWN, KY.

WHERE LOUIS PHILIPPE WAS ENTERTAINED AS THE GUEST OF BISHOP FLAGET (PICTURED IN INSET). THE AGED ECCLESIASTIC RENDERED THE EXILED DUC D'ORLEANS FINANCIAL ASSISTANCE IN HIS PERIOD OF EXILE.

Peter in Chains" and "A Winged St. Mark," by Vandyck; "St. John the Baptist" and "The Flaying of St. Bartholomew," by Rubens; "The Coronation of the Blessed Virgin," by Murillo, and an unknown painter's "The Annunciation."

Such a group of masterpieces as this might grace the transept of an Old World cathedral or be coveted of a Continental city. They are large paintings and are hung high in the silent nave, where the light from upper windows illumines them and where, at eventide, they assume a wondrous mysticism of form and color.

Another gift of notable historic and artistic value made by Louis Philippe to St. Joseph's Church was a set of ecclesiastical vestments embroidered by the ex-Queen Marie Amelie, the Princess Adelaide and the ladies of the royal family following the overthrow of the Bourbon king and the flight of the court from Paris to England, where, at Clermont, Louis Philippe and his family lived in exile until his death, August 26, 1853. That the thoughts of the exiled ladies

seem to have dwelt upon the sufferings of royalty is apparent from the fact that a series of medallions worked upon the vestments represents the Kings of the Line of David and the sainted kings of France—Charlemagne, Clovis and Louis IX.

The hours of matins and vespers and of masses, the Angelus and the toll for the departed are still rung out upon the clear mountain air at St. Joseph's by a bronze bell presented to the cathedral by the Duke of Orleans several years before he became king. The bell, of deep and sweet tone, was cast at Lyons. It bears the following inscription:

A. D. 1821,
Louis Philippe,
King of the French,
Gave to St. Joseph's Church,
Bardstown, Ky.,
This Bell
Which Broke
And Was Recast,
A. D. 1887.
Kaye & Co., Louisville, Ky.

In the Cathedral at Louisville and in the chapel of the Roman Catholic Orphan

Asylum at Preston Park, Louisville, there repose two other precious gifts of the French sovereign. The former edifice art spirit should have flowered from the beautiful objects donated to St. Joseph's by Louis Philippe. The cathedral, the



LOUIS PHILIPPE, KING OF THE FRENCH

WHO ASCENDED HIS THRONE TO THE MUSIC OF THE "MARSEILLAISE" AND THE BOOM OF CANNON THAT BUT A SHORT WHILE BEFORE HAD BEEN TRAINED ON THE TUILERIES.

houses superb golden candelabra, and the latter a richly wrought golden tabernacle, both presented by Louis Philippe.

It is, therefore, not surprising that an

college and the Nazareth Academy came in later years to share in gifts of great intrinsic value and of true artistic splendor.

Two of those, bestowed upon the convent

PROCESSION OF NUNS ON THE CAMPUS OF THE NAZARETH ACADEMY—THE COMMUNITY OF SISTERS RENDERED NOTABLE ASSISTANCE TO THE WOUNDED IN THE CIVIL WAR.



THE ART GALLERY OF THE NAZARETH ACADEMY—ANOTHER DEVELOPMENT OF THE ART SPIRIT DERIVED FROM THE DONATIONS OF LOUIS PHILIPPE TO THE COMMUNITY.

THE CHAPEL AND FACADE OF THE CONVENT OF NAZARETH ENVIRONED BY THE BEAUTIFUL BLUE GRASS HILLS OF OLD KENTUCKY.



A CHARACTERISTIC SYLVAN SCENE ON THE GROUNDS THAT SURROUND NAZARETH ACADEMY—THE BOURBON EXILE LOVED TO WANDER ABOUT THE VERDANT FIELDS AND WOODS OF THIS LOVELIEST AND MOST PICTURESQUE OF AMERICAN HIGHLANDS.

SCENES ABOUT LOVELY NAZARETH, THE CONVENT ACADEMY MAINTAINED BY THE SISTERS OF THE BARDSTOWN COMMUNITY

BRONZE GROUP OF THE HOLY FAMILY IN FRONT OF THE NAZARETH ACADEMY, NAZARETH, KY., A VISIBLE EVIDENCE OF THE ART INFLUENCE THAT SPRANG FROM THE MUNIFICENCE OF THE BOURBON KING.



ST. VINCENT DE PAUL, CAST IN BRONZE—ONE OF TWO STATUES PRONOUNCED BY CARDINAL SATOLLI TO BE THE FINEST EXAMPLES OF RELIGIOUS ART IN AMERICA.

at Nazareth, are a bronze group of the Holy Family, and another of St. Vincent de Paul, which, surrounded by graceful copings of stone, stand before the center of the French Gothic convent buildings. These statues were pronounced by Cardinal Satolli, late Apostolic Delegate to the United States, to be the finest examples of religious sculpture he had seen in the New World. A facsimile, in Carrara marble, of the famous grottoed statue of Our Lady of Lourdes, of France, is another work on the convent grounds that approaches in beauty and grace the group of the Holy Family. Within the convent this art spirit has so thrived as to develop a gallery of paintings and sculpture, many of them the work of classic and contemporary masters, that one would scarcely look for at a point removed from the greater centers of culture.

From the sweet and æsthetic influence of the religious environment wherein he

dwelt at Bardstown, Louis Philippe returned, at the beginning of the nineteenth century, to Europe. Thirty years, however, were to elapse ere he might assume the crown and sceptre of France. He was still an exile from his native land, which was then in the first flush of the Napoleonic successes. He repaired to Palermo, where Ferdinand IV held his court. It was there that he first met Marie Amelie, the pious daughter of the Bourbon King of Sicily, who later became his consort. His love for the Princess and his loyalty to the Bourbons impelled him to accompany her brother upon an expedition to aid the Spanish Bourbons against the depredations of King Joseph Bonaparte. At the instance of the British Government he was stopped at Gibraltar and taken to England, where his sister, Adelaide, joined him. Returning to Palermo with his sister, he became re-united with his venerable mother, who had been in exile

at Barcelona since 1797. His marriage to the Princess Marie Amelie was solemnized in the royal chapel at Palermo, November 25, 1809.

Upon the downfall of the Second Empire, the titles and estates of Louis Philippe were restored to him, and with his young wife he proceeded to Paris and effected a reunion with the elder branch of the Bourbon house.

He came to take a very active part in the turbulent politics of the time and one factor which contributed materially to the growth of his influence was his well-defined position that the only substantial guarantee for national safety between the extremes of Republicanism and Absolutism lay in the support of the *bourgeoisie* or middle class.

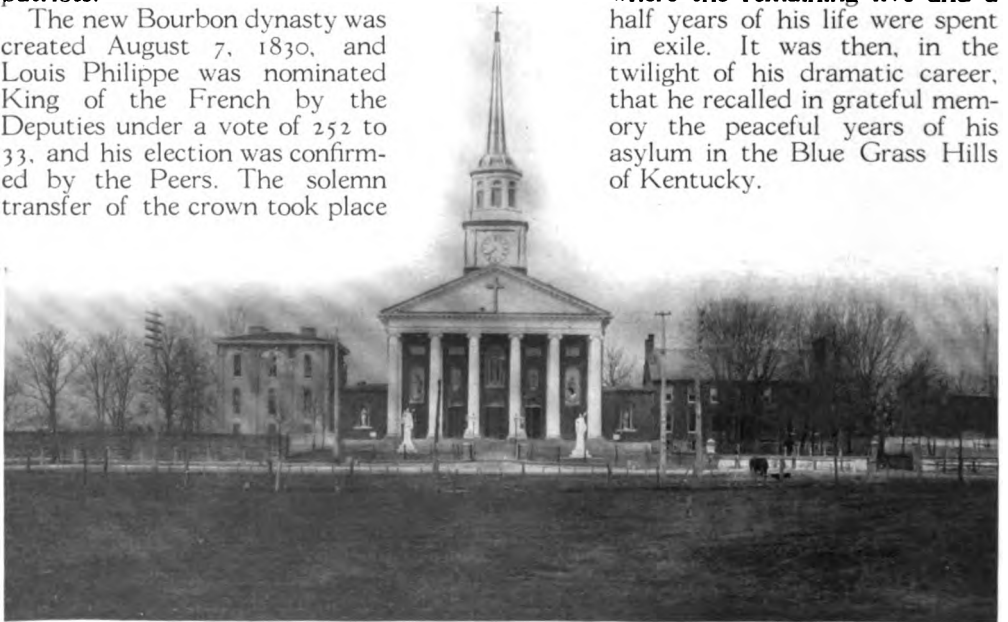
When, during the revolution of July, 1830, Lafitte sought for France a leader of force and balance who might effectively rally the nation to the Bourbon arms, the name of Louis Philippe suggested itself to him. The Duke was prevailed upon to accept the title and office of Lieutenant-General of the Kingdom. An incident of the public reception accorded him at the Hotel de Ville was his appearance at a balcony window, enshrouded in the Tricolor, with General Lafayette, who embraced the new ruler of France, amid the frantic acclaim of the French patriots.

The new Bourbon dynasty was created August 7, 1830, and Louis Philippe was nominated King of the French by the Deputies under a vote of 252 to 33, and his election was confirmed by the Peers. The solemn transfer of the crown took place

at a royal sitting of both chambers of the Parliament. Louis Philippe effected a dramatic entrance as numerous assembled bands crashed forth the "Marseillaise" and the salutes of cannon rocked the beautiful capital.

One of the first acts of the newly crowned sovereign was the accrediting as ambassador to Great Britain of Talleyrand, whose astute diplomacy paved the way for an *entente* between the two powers which for centuries past had warred upon each other. Another of the beneficent results of the regime of Louis Philippe was the establishment of the great railway lines of France.

A brilliant succession of ministries aided his government, with Thiers, Guizot, Mole and Soult as premiers. But the French people had tasted of the fruit of popular government, and it seemed inevitable that there should be a return to the republican form of administration. With factional strife among the Royalists in power and the straining at the leash of the Republicans, the downfall of the dynasty came with the *coup d'etat* of February 24, 1848. The aged King too late sought to abdicate in favor of his grandson. His throne was burned in the Place de la Concorde and with his family he sought refuge in flight. He made his way across the Seine with difficulty and so to England, where the remaining five and a half years of his life were spent in exile. It was then, in the twilight of his dramatic career, that he recalled in grateful memory the peaceful years of his asylum in the Blue Grass Hills of Kentucky.



THE WHY OF THE CAPE COD CANAL

By COMMODORE J. W. MILLER

" AT THIS stage of public opinion the Cape Cod Canal was brought to Mr. Belmont's attention. He recognized that many of the contemplated works should be governmental and that others ought to be under state control; on the other hand it seemed apparent that, if one of the proposed channels of lesser magnitude could be built through private capital and made financially profitable, money would be forthcoming for others and that thus * * * the cause of improving local waterways would be advanced without increase of general taxation."

IN a rapidly growing country there is much that is accidental or fortuitous in the way capital seeks employment. Things cannot be done all at once, and many enterprises of recognized utility fail to attract the capital their merit deserves.

The Cape Cod Canal has been one of these. Its former advocates did not appreciate the fact that the last fifty years constituted a period when the country was rightfully occupied with the prior necessity of creating ample facilities by land before improving transportation by water. The first question, therefore, which presented itself to our minds was, whether the psychological moment had arrived when the channel, which had been in the public eye for over a century, could be safely financed.

The following considerations seemed to give an answer:

During the past few years the general trend of thought has been toward a revival of marine commerce. The national, and even international, importance of the Panama Canal has awakened the West from its lethargy and created once more an enthusiasm for the improvement of the Mississippi.

The Government, having replaced an obsolete navy by a modern fleet, is alive to the strategic need for a system of deeper Atlantic coast waterways as an interior line of defense, through which its military craft of light draft can pass quickly and unmolested, in time of war, to any required rendezvous.

The States, with numerous obsolete



Pachman Bros.

canals built before the more mobile steam power came into use, have become aware of the necessity of reconstructing them for service under new conditions — conditions which are so fully appreciated abroad, especially in Germany.

The building of the Great Lakes commercial fleet has proved to previously hostile railroads that their lines are benefited through the opening of parallel water routes.

Eastern railway managers, finding that their routes were becoming congested, have realized that New England, in order to regain her prestige as a manufacturing center, must receive her raw material and fuel cheaply, which means by sea.

With prescience and forethought, with appreciation of the above-expressed change of opinion, the National Rivers and Harbors Congress has, for several years past, focused attention upon the vital urgency of preparation for a wider world market. With this high aim before it, it has advocated the improvement of rivers, bays and sounds, which, when deepened, will carry the products of the interior to the ocean and thence to new markets, especially to those of South America.

The foregoing tendencies and reasons showed that, in all sections, the trend of thought was favorable to a much more extended use of waterways.

At this stage of public opinion the Cape Cod Canal was brought to Mr. Belmont's attention. He recognized that many of the contemplated works should be governmental, and that others ought to be under state control; on the other hand it seemed



THE DREDGE "GOVERNOR WARFIELD"
DIGGING THE CANAL AT THE RATE
OF 10 CUBIC YARDS PER BITE.

apparent that, if one of the proposed channels of lesser magnitude could be built through private capital and made financially profitable, money would be forthcoming for others; and that thus, through individual and corporate effort, the cause of improving local waterways would be advanced without increase of general taxation.

The initial step was to make a final study of previous surveys of the Cape Cod Canal. An exhaustive investigation proved that its physical and engineering conditions presented no obstacle. The natural



A GLIMPSE OF THE GREAT STONE BREAKWATER, EXTENDING 3000 FEET INTO BARNSTABLE BAY, WHICH PROTECTS THE NORTHERLY ENTRANCE TO THE CAPE COD CANAL.

chester Canal, the channel would accommodate the 25,000,000 tons of freight and the 500,000 passengers that are to-day rounding the Cape through waters which have been known as "the graveyard of ships;"

That the present fog-bound, dangerous route would be shortened 70 miles in distance and about three days in time for the barges which carry 8,000,000 tons of coal;

That present-day conditions require cheap fuel for the eastern mills and quicker carriage from the mines to New England, and that mobility, safety and economy would be assured by the new channel; and

That arguments applicable to coal apply to other crude material.

Hence, with a known and increasing tonnage seeking a more favorable



RAILROAD BRIDGE, HALF OPEN

THE BUILDING OF THE CANAL MADE NECESSARY THE BUILDING OF BRIDGES TO CARRY HIGHWAYS AND RAILWAYS ACROSS ITS CHANNEL. THE RAILROAD BRIDGE AT BUZZARD'S BAY IS OF A TYPE THAT CAN BE OPERATED QUICKLY AND LEAVES A CLEAR CHANNEL WHEN OPENED.

transit, arose the question: Could this tonnage afford to pay a toll sufficient to meet a fair interest upon the \$12,000,000 required to build the canal? A favorable answer followed when statistics proved that every ton of freight could stand a rate equal to the difference between the expense of carrying it through Vineyard Sound and through the new route. This difference amounts to some \$400 for 4000-ton cargo ships, without computing the advantage of extra trips per annum; hence it was concluded that the known and increasing tonnage would use the canal, provided it were built in a proper manner and equipped with modern facilities. It is being so built.

In preparing for the operation of the canal much information has naturally been gathered regarding present methods of water transportation. Notwithstanding the fact that it has often been rightfully stated that water transit is the cheapest in the world, it is equally true that through lack of cooperation between the mines and the railroads carrying raw material to ports and through the lack of modern facilities at eastern ports, where the manner of unloading from cars to steamers is archaic, much money is still wasted.

When this waste has been eliminated and the steamers, which are large units, can be kept moving the year round, there will still remain a margin for even higher rates and a possibility that the consumer will receive his coal at less price than to-day. Thus the country, the public and invested capital will each and all be benefited.

This subject is mentioned because it may be beneficial in leading towards a study of more scientific management, the thought being to emphasize any facts which may be advantageous to the coal carrying trade, or, on the other hand, any faults which may be remedied, and thus advance the general cause of coast water transportation.

In the same spirit of helpfulness the suggestion is made that the quickest road toward government aid for other canals is to prove, through the Cape Cod Canal, that a private corporation can be profitably operated. This accomplished, larger works of national importance will follow.

The same methods of individual effort and corporate development, which have

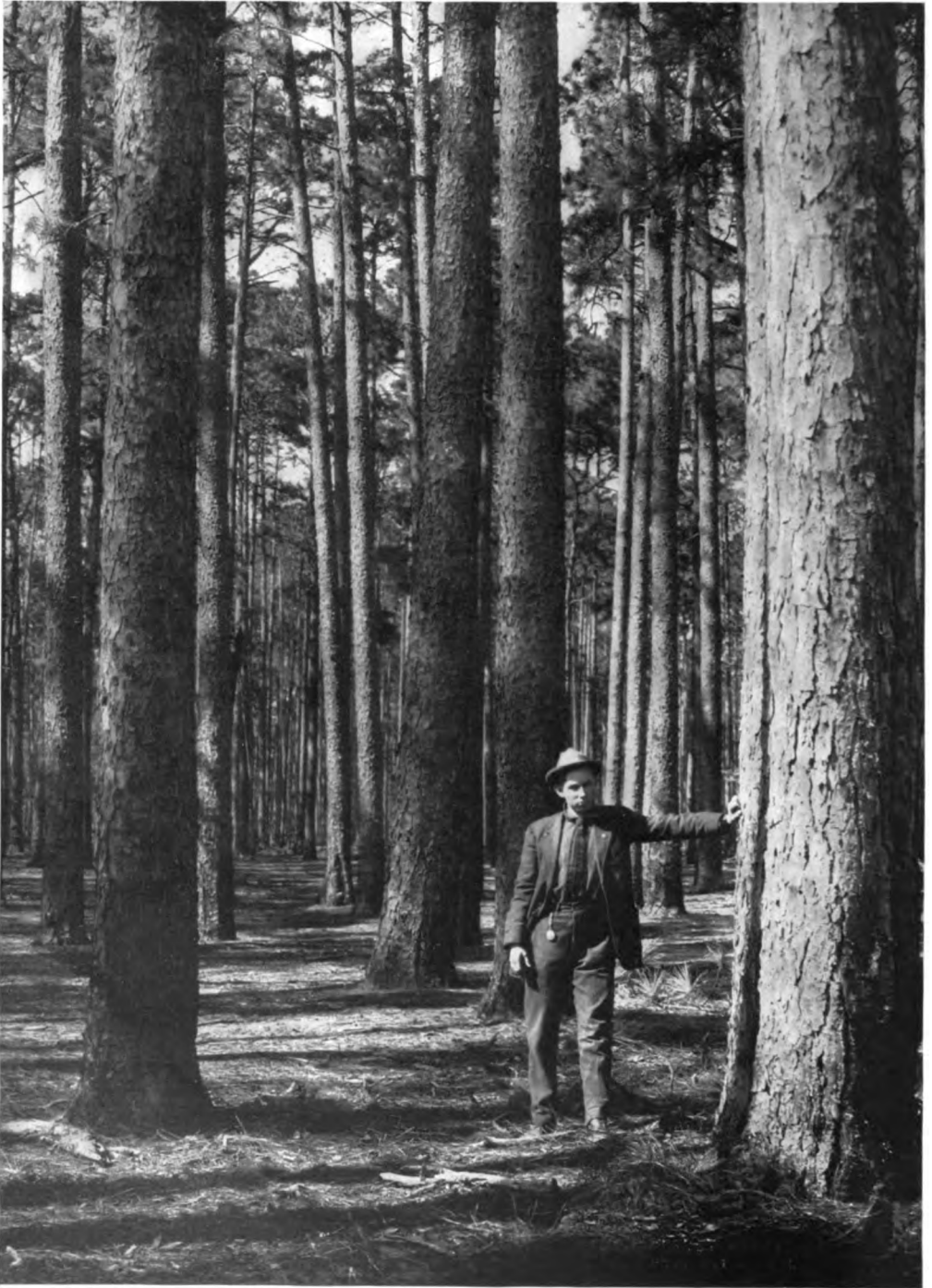


BEFORE WORK WAS BEGUN UPON THE CAPE COD CANAL EVERY QUESTION RELATING TO ITS FINANCING, CONSTRUCTION AND OPERATION WAS THOROUGHLY STUDIED. WHEN THIS SNAPSHOT WAS TAKEN PRESIDENT BELMONT WAS DISCUSSING THE FUTURE OF THE CANAL WITH A BOSTON BANKER

in the past created the country's systems of land transportation, can undoubtedly be successfully applied to ocean traffic. This system is especially worthy of consideration at a time when the tendency toward governmental control is contrary to democratic principles and unwise from an economic point of view.

The men behind our enterprise, either from heredity or profession, are advocates of an increased marine commerce; therefore, for all the reasons before mentioned, their opinion is that the sequence of effort and of accomplishment should follow the same lines as those heretofore used in promoting the welfare of the United States on land.

Such effort, however, should not for a moment tend to relax the great work of waterway organizations; no means should be left unused to obtain government aid, but, as individuals, each one of us should strive for some definite object in his own neighborhood, and thus spread education for the general improvement of our rivers, sounds and bays, and show what all-water transportation means to a nation seeking the markets of the world.



Trost Studio, Port Arthur

IN A FOREST OF LONG-LEAF PINE

ONE HUNDRED AND EIGHTEEN MILLS WITHIN 100 MILES OF BEAUMONT HAVE A DAILY CUTTING CAPACITY AGGREGATING MORE THAN 5,000,000 FEET. BEAUMONT LUMBER CONCERNS HANDLE MORE THAN 300,000,000 FEET OF LUMBER ANNUALLY

MATCHING DOLLARS WITH UNCLE SAM

By T. W. LARKIN

THE Secretary of the Beaumont Chamber of Commerce says: "Tonnage naturally seeks the first water outlet, and Beaumont will be the nearest port for a large and heavy tonnage-producing territory. * * * * The greatest ports of the world are inland ports—Liverpool, on the Mersey; Glasgow, on the Clyde; London, on the Thames; Bristol, on the Avon; Hamburg, on the Elbe; Paris, on the Seine; New York, on the Hudson; New Orleans, on the Mississippi; Manchester, on the Manchester Canal. Why not Beaumont, on the Neches?"

HOW a railway builder, baffled in getting his road to the Gulf, brought the Gulf to his road; how a marshy cow-pasture was transformed in a dozen years into a seaport with an annual commerce of more than \$40,000,000; and how two Texas river cities, determined to make seaports of themselves, matched dollars with Uncle Sam and all three of them won, it is the purpose here briefly to set down.



Moore, Denison

The history of Port Arthur reads like a romance. A dozen years or more ago, Arthur Stillwell, backed by a plucky lot of capitalists, built the Kansas City Southern, then called the Kansas City, Pittsburgh & Gulf Railway, southward from Kansas City. Stillwell was headed for Sabine, but the Southern Pacific Railway forestalled him by securing possession of all the available waterfront and refusing to let the Kansas City, Pittsburgh & Gulf Railway come in. Stillwell found the southern terminus of his line in a cow-pasture covered with marsh grass.

Instead of giving up in disgust he stopped throwing up grades for railroad tracks and began digging a ditch large enough for big ships to float in. As it was impossible to maintain a channel through the shallow water and the shifting sands of Sabine Lake, it was decided to build a canal around it. This canal, begun in 1897 and finished in 1899, was 25 feet deep, 100 feet wide on the bottom and cost \$1,000,000.

That was a little more than thirteen years ago, and to-day Port Arthur, the "cow-pasture port," is the second port on the Texas coast and ranks among the

most important on the Gulf of Mexico. In 1911 more than 200 vessels entered and cleared at Port Arthur, and the foreign and domestic commerce amounted to \$43,293,854. Having accomplished the purpose for which it was constructed, i. e., to provide a port for Stillwell's railroad, the Port Arthur Canal was offered to the Government as a gift, on condition that the Government would maintain it. Uncle Sam took some time

to decide whether or not to accept the gift, but at last, on December 13, 1906, the conveyance was made and the Port Arthur Canal became a United States waterway.

Beaumont is located on the Neches River, and Orange on the Sabine River. Both are wide enough and deep enough to accommodate the Nation's navy, but both empty into the same shallow lake.

With the advent of railroad competition to Sabine Pass, and later to Port Arthur, the crude craft that had so long served the commerce of the country were put out of business, and the use of the Sabine and Neches Rivers was greatly minimized. Boats which could get through the shallow Sabine Lake could not venture out on the waters of the Gulf. But Arthur Stillwell solved the Sabine Lake problem by digging a channel around it to a point about half-way between the mouth of Sabine Pass and the mouth of the Neches River. Then the towns of Beaumont and Orange sought to have the channel extended around the west side of the lake to the mouth of the Neches, and thence across the north end. This agitation be-

gan almost as soon as the Port Arthur Canal was finished and the port possibilities of the latter community were realized.

Due to the untiring efforts of Representative S. B. Cooper, of the Second Texas Congressional District, an appropriation was finally made for a canal 9 feet deep and 100 feet bottom width. The work was begun at the mouth of the Sabine, March 1, 1906, and completed February 20, 1908, under the direction of Major J. F. McIndoe. The cost was about \$240,000. The canal served for light-draft vessels, and considerable coastwise trade was established. Lumber and oil were shipped from Beaumont and Orange and intermediate points to Mexico and to ports east along the Gulf coast.

In 1909 a most determined effort was begun to secure an appropriation sufficient to deepen the canal to twenty-five feet. The Board of Engineers of the United States Army denied endorsement, and the Rivers and Harbors Committee repeatedly denied recognition.

At a meeting of the board of directors of the Chamber of Commerce of Beaumont, held January 5, 1909, the following resolution, looking to the issue of bonds was adopted:

"Whereas, the proposition is one of vital importance to the people of Beaumont and all the people of a large area of productive country to which the proposed improvement will save vast sums in freight rates, and thus encourage the further development of the resources and increase the population of the towns and country; and

"Whereas, it seems improbable that a Federal appropriation adequate to make the necessary improvement can be secured as early as the urgency of the case demands, and realizing that delay is dangerous to this important project: Be it

"Resolved, that the Beaumont Chamber of Commerce favors immediate arrange-

ments for issuance of bonds for the improvements desired, such bonds to be issued against the credit of the country immediately affected, and that the proposition be submitted to a vote of the people with the least possible delay; that a committee be appointed to draft a bill necessary to formally delegate such constitutional power to our people, and that such a bill be submitted to the Texas Legislature as soon as possible."

On July 19, 1909, a Navigation Board was appointed, consisting of three of Beaumont's foremost citizens: W. S. Davidson, J. Frank Keith and J. E. Broussard. Messrs. Davidson and Keith

are veteran workers for deep water channels. Then began another fight for recognition at Washington. Committees went before the Board of Engineers and the Rivers and Harbors Committee; and there they met with many reverses. Adverse reports were made, but the Beaumonters kept on fighting, and their cause was championed by Congressman Martin Dies, who had succeeded Congressman Cooper; by Congressman R. L. Burgess, the Texas member of the Rivers and Harbors Committee; and by Senator

Joseph W. Bailey, who made one of the most courageous fights ever waged for a river and harbor measure on the floor of the United States Senate, and he won. He compelled recognition of the project, which seemed to be quite without friends among the engineers and the "powers that be," or rather the "powers that were," on the Rivers and Harbors Committee.

A committee, appointed to look into the matter and to devise ways and means, "got busy" immediately. At first it appeared that there was no legal manner in which a community in Texas could spend its money for navigation purposes; it was even feared that there might be a constitutional bar. But the legal tangle was speedily unraveled by the committee,



RICE
ON THE
GULF
COAST
IS ONE
OF THE PRINCIPAL PRODUCTS. ITS CULTIVATION IS COMPARATIVELY SIMPLE FOR IT IS NOT GROWN IN SWAMPS BUT ON SOLID GROUND. THIS CAN BE FLOODED WHEN NECESSARY, BUT ALLOWS THE USE OF MACHINERY FOR PLANTING, ETC.



A STUDY IN LIGHT AND SHADE

COMMERCE IS NOT THE ONLY PURPOSE THAT WATERWAYS CAN SERVE. THE MAGIC OF THE MOTOR BOAT IS LURING AN EVER-INCREASING NUMBER TO HEALTHFUL RECREATION IN "GOD'S GREAT OUT-OF-DOORS"

which was composed of W. S. Davidson, Leon Sonfield, W. P. Hobby, R. A. Greer and T. W. Larkin. It was discovered that, in an amendment to the Texas constitution which authorized the formation of irrigation and drainage districts, navigation districts had been included, subject to legislative action. Thereupon the committee drafted a bill and carried it to the State Legislature.

In record time it was enacted into law, and on February 20 received the Governor's signature. A navigation district was at once formed in Jefferson county. The election—the first of its kind ever held—took place July 8, 1909, and was almost unanimous in authorizing a special tax and the issuance of \$498,000 of navigation bonds, the first bond issue of the kind ever authorized in the United States. The amount of the bond issue was based upon the estimated cost of deepening the canal to 25 feet from the mouth of the Neches River to the Port Arthur Canal, and the improvement of the river from its mouth to Beaumont.

A special Board of Engineers of the United States Army went to Beaumont,

saw the project and conducted a hearing. They endorsed the project, and the proposition was finally accepted by Congress after another vigorous effort by Senator Bailey and his aides.

By this time the people of Orange and Orange County had voted a bond issue of \$100,000 to pay one-half the cost of deepening the canal from the mouth of the Neches to the mouth of the Sabine, so that Orange might also enjoy the ocean commerce made possible by Beaumont's payment of one-half the cost of deepening the canal from the mouth of the Neches to the Port Arthur Canal. It was nearly a year later that Houston also availed herself of the State law enacted through the efforts of Beaumont citizens, and adopted the "Beaumont plan." Thus it will be seen that Beaumont's plucky efforts may give the Texas coast three more important ports.

The Beaumont Navigation District bonds were sold November 13, 1911; bids for the work were opened January 2, 1912; the contract was awarded to the Bowers Southern Dredging Company; and work began March 15, 1912. The dredging,

happily, is already running ahead of the estimates and it is safe to assume that the most necessary work will be done long before the time limit of the contract. In fact, it is confidently expected that next New Year's Day, or January 1, 1914, will see the completion of the canal proper, which will enable ocean-going vessels to get through. As soon as the canal is finished, vessels 300 feet in length can ply the rivers under their own steam, and vessels of maximum length can be handled under tow until the cut-offs are made. Then the largest vessels can come and go at will to and from the fresh-water harbors of Beaumont and Orange.

Beaumont and Orange will surely become great inland ports. Their possibilities are evidenced by the marvelous growth of Port Arthur, which is really served by only one railroad, the Kansas City Southern; for, although the Southern Pacific has a spur into the city of Port Arthur, it has no sympathetic interest in the port. Beaumont has eleven diverging rail lines, and Orange has three. Beaumont has a population of 25,000, Port Arthur of 9,000 and Orange of 5,000.

It may be said that the real port possibilities of Beaumont and Orange date from the construction of the Port Arthur Canal, and that their prospects became more substantial when the conveyance of that canal was made to the Government.

The Beaumont Chamber of Commerce thus suggests the possibilities:

"All the tonnage that now goes to Port Arthur; all that goes to Port Bolivar, and twenty-eight per cent. of the tonnage going to Galveston, passes through Beaumont to shipside; but that does not necessarily mean that all this tonnage will stop at Beaumont. The ports of Beaumont and Orange will only serve to attract more commerce and more ships to the Texas coast. None will be hurt; all will be helped."

Beaumont is "taking time by the forelock," and in order to be ready to handle the commerce, by the time the ships are able to come, the City Council, at the request of the Chamber of Commerce, appointed a "Wharf and Dock Commission," which is charged with the duty of devising ways and means and planning the most modern port and terminal



A TYPICAL TEXAS LOGGING TRAIN

IN ADDITION TO ITS OIL AND COTTON FIELDS, THIS SECTION OF THE GREAT "LONE STAR STATE" IS ALSO RICH IN LUMBER AND OTHER THINGS ESSENTIAL TO A COMMANDING COMMERCE



ON THE DOCKS AT PORT ARTHUR

ONE WHO LOOKS UPON THE WATERFRONT OF THIS THRIVING TEXAS PORT CITY GETS AN IMPRESSION OF CEASELESS ACTIVITY AND MARVELS AT ITS FUTURE POSSIBILITIES

facilities. This commission has visited and inspected the principal southern ports, and has prepared a very comprehensive report and outline of plans for the city of Beaumont.

It is considered that Beaumont must become primarily a lumber port and that facilities for handling lumber for ocean traffic equal to any to be had at other ports must be provided. There are about 400 sawmills in what is commonly called "The Beaumont country," embracing Southeast Texas and Southwest Louisiana. One hundred and eighteen mills within 100 miles of Beaumont have a daily cutting capacity aggregating more than 5,000,000 feet. Beaumont lumber concerns handle more than 300,000,000 feet of lumber annually. There are four sawmills in and near Beaumont, the daily cutting capacity being 500,000 feet. Beaumont is not only the pine lumber center of Southeast Texas and Southwest Louisiana, but there are, close at hand, enormous forests of hardwood timber which have hardly been touched. There

is a great field for wood-working factories.

Beaumont is the center of the oil industry of Southeast Texas and Southwest Louisiana. The Magnolia Petroleum Company is greatly enlarging its refinery at that place, and with the completion of the deep-water project and the opening of the port of Beaumont, there undoubtedly will be more extensive operations. Beaumont people and Beaumont capital operate extensively in the various oil fields in Southeast Texas and Southwest Louisiana. The greater portion of the oil is piped either to or through Beaumont to the refineries at Beaumont, Port Neches and Port Arthur.

The far-famed Spindle Top oil field produced 998,093 barrels in 1911. The Sour Lake, which is twenty miles north of Beaumont, and which field is largely owned by Beaumont people, produced 1,408,977 barrels. Batson, which is about 45 miles northwest of Beaumont, and largely owned by Beaumont people, produced 1,018,102 barrels; Saratoga, forty miles northwest of Beaumont, also largely owned by Beaumont people, produced



ON A SHELL ROAD NEAR BEAUMONT

THIS WONDERFUL GULF COAST COUNTRY, WITH ITS COUNTLESS OPPORTUNITIES, IS FAMOUS FOR ITS FINE ROADS, WHICH ARE AT ONCE A DELIGHT TO THE AUTOMOBILIST AND A BENEFIT TO THE FARMER

958,886 barrels. The Saratoga production is increasing.

The Vinton field, forty miles east of Beaumont in Louisiana, is practically owned by Beaumont people. This new field had a production in 1911 of 3,232,673 barrels. Beaumont people are also interested in the Caddo field in Louisiana, which had a production in 1911 of 8,359,662 barrels. The Gulf Refining Company, which has headquarters in Beaumont, is one of the principal producers and purchasers of crude oil in the Caddo field. This company runs a pipe line from the Caddo field to connect with the Oklahoma-Beaumont-Port Arthur pipe lines, and the Gulf Refining and Texas companies also operate pipe lines from the Oklahoma fields, and the greater part of the Caddo field is thus handled.

Beaumont people are also interested in the Humble field, located near Houston, and which had a production of 2,170,210 barrels. The Magnolia Petroleum Company refinery at Beaumont has pipe line connections with the oil fields of Central and Northwest Texas, and handles prac-

tically all of the production of the Electra, Petrolia, Corsicana, and Powell fields. The Electra field, in which the discovery well was brought in April 1, 1911, produced up to January 1, 1912, 892,204 barrels. In 1911, the Petrolia field had a production of 158,212, against 123,031 in 1910. The Powell field produced 302,056 barrels in 1911, as compared with 270,106 barrels in 1910. The Corsicana fields produced 128,016 barrels in 1911, against 132,706 barrels in 1910.

Beaumont is nearer by air lines to all of the cotton fields of the great Southwest than any other port. With the completion of a railroad now projected, Beaumont will have direct communication with these fields. Already cotton shipments from the Sabine-Neches ports are considerable and are constantly increasing. The facilities of Port Arthur for cotton-handling were more than doubled during the last year. Beaumont expects to get into the cotton business with the completion of the canal.

Wheat is another export product that is growing in volume at the Texas ports, and plans are being laid for the acquisition of

the necessary terminals and elevators for the handling of the cereal, for Beaumont is the nearest port to Kansas City and the great grain-growing district.

The great iron ore fields of East Texas are located north of Beaumont, and it is confidently felt that Beaumont will have smelters located here when those fields are developed. It is, therefore, safely to be assumed that pig-iron will move through the new port.

It is expected that the principal wharves, warehouses and terminal facilities will be owned and controlled by the municipality, so that an absolutely open port for all railroads and all shippers will be assured.

With the deepening of the Sabine-Neches canal, Beaumont will have a highway to all the ports of the world; a safe land-locked harbor, above high water and away from the danger of storms; and cheap public wharfage facilities and plenty of water-front available for wharves, warehouses and factory sites. The river is 400 feet wide and 30 feet deep at the foot of

Beaumont's principal business streets. The distance from Beaumont to the mouth of the river is 22 miles. The length of the canal from the mouth of the river to the Port Arthur ship channel is 11.6 miles.

Tonnage naturally seeks the first water outlet, and Beaumont will be the nearest port for a large and heavy tonnage-producing territory. When the Beaumont-Waco Railroad is constructed, Beaumont will be the nearest port to South, Central and Southwest Texas, the nearest port for at least 75 per cent. of the Texas tonnage, and the nearest port for Oklahoma, Kansas, Southwest Louisiana and Southwest Arkansas.

The greatest ports of the world are inland ports—Liverpool, on the Mersey; Glasgow, on the Clyde; London, on the Thames; Bristol, on the Avon; Hamburg, on the Elbe; Paris, on the Seine; New York, on the Hudson; New Orleans, on the Mississippi; Manchester, on the Manchester Canal. Why not Beaumont, on the Neches?



A FOREST-BORDERED WATERWAY

THESE TEXAS STREAMS, NOW SO CHARMING IN THEIR PICTURESQUE BEAUTY AS THEY FLOW BETWEEN THEIR WOODED BANKS, ARE DESTINED TO BECOME THE CHANNELS OF A GREAT AND GROWING COMMERCE

CREATORS OF PROSPERITY

By S. A. THOMPSON

THE tariff affects some things and some people, part of the time; transportation affects everything and everybody, everywhere, and all the time. Transportation affects the price of everything you eat, wear, buy, sell or use in any way—except air, water and sunshine. Do you know which costs the people of the United States the more, taxation or transportation? Do you know why the largest towns are always on waterways? Here are some facts that are worth your attention.

I TRANSPORTATION, AND OTHER, TAXES

SOME years ago an enthusiastic inventor used every dollar he had of his own, and all he could borrow from his friends, in building a colossal machine which he felt certain would make pressed brick faster than they had ever been made before. At last it stood complete, every cam and cog and lever in its proper place, and the proud inventor signaled the engineer to turn on the steam. For a minute or two it seemed that his fondest anticipations were to be fully realized, for from every side of the huge machine the bricks came pouring out in a veritable flood. But then the bricks that followed began to pile up on those that went before, and both were broken. Soon every outlet was hopelessly clogged; the great machine groaned, staggered, stopped—and the power was hastily shut off to keep the whole thing from going to wreck. The machine did make brick faster than they had ever been made before, but it could not be operated because it was impossible to take them away as fast as they were made. The inventor had found a splendid solution for the problem of production, but had forgotten the fundamental problem of distribution—and the shapes of mountain lakes are no more surely fixed by their rocky shores than the possibilities of profitable production are determined by facilities for transportation.

The great mass of the people of the United States have just about as much, or rather as little, appreciation of the real importance of the transportation question as the inventor above referred to. Judging by the amount of attention given to it, the tariff question is our greatest national problem. Political parties divide over it;

orators declaim about it, some denouncing it as the sum of all villainies, some commending it as the chief bulwark of national prosperity; metropolitan dailies and obscure country weeklies alike fill their columns with articles about it; citizens of all classes and in all parts of the country argue over it; and special sessions of the National Congress are called to consider it.

The tariff is undoubtedly an important matter and probably deserves all the attention that is being given it, but a question of much more far-reaching importance, that of transportation, is receiving comparatively little attention from legislators and the press, and practically none at all from the general public. It is scarcely too much to say that the average citizen does not know there is a transportation question. But transportation affects everything he buys or sells, everything he eats or wears, in fact everything he uses in any way, with the exception of air, sunshine, and, generally, water. The cost of transportation is a tax which bears upon both production and consumption, both industry and commerce. It is taxation without representation, too, for the people, who pay the tax, elect neither those by whom it is levied nor those by whom it is collected, and have practically no voice in determining the rates. To a casual observer it appears that the rates often bear less relation to ability to pay than to inability to escape payment. How do the transportation taxes of the average citizen compare in amount with those he pays on account of the tariff and for other purposes?

During the fiscal year ended June 30, 1907, the average amount per capita collected by the Government of the United States in duties on imported merchandise was \$3.84. During the same year the

average per capita contribution to the revenues of the railways of the United States was \$30.86. That is to say the transportation taxes levied and collected by the railways in the year named were more than eight times greater in amount than the duties collected on imports by the National Government. That this was not an exceptional case will appear from Diagram No. 1, in which comparative figures (taken from official publications of the Government) are shown graphically for the fifteen years ended with 1908. Transportation has the tariff hopelessly beaten at the very outset of the race.

Patriotic Americans are accustomed to consider the Government of the United States a rather large and important affair. This opinion is certainly not without some

justification, but financially the Government is completely outclassed by transportation. In the fiscal year 1907 the average receipts of the Government, from all sources except sale of bonds, were \$9.84 per capita, while railway revenues, as already stated, were \$30.86. Diagram No. 1 shows, for a series of years, the relation between the per capita receipts from customs duties, governmental receipts from all sources, and railway revenues.

These figures become more impressive when stated as aggregates rather than as receipts per capita, for during the fifteen years covered by the diagram the amount collected in duties on imports was \$3,374,468,851; the total receipts of the National Government from all sources, including postal revenues but not proceeds of bonds, were \$8,908,359,045; and the gross earn-



RAILWAY TARIFF VS. GOVERNMENT TARIFF

TRANSPORTATION TAXES COST THE AVERAGE CITIZEN MUCH MORE THAN TARIFF TAXES THE GROSS INCOME OF AMERICAN RAILWAYS IN 1911 WAS OVER NINE TIMES AS MUCH AS THE GOVERNMENT COLLECTED IN DUTIES ON IMPORTS

ings and income of the railways of the United States, excluding all duplications due to intercorporate payments, amounted to \$25,619,370,590. That is to say the transportation tax collected from the peo-

already be evident that transportation deserves more attention than it is getting: but the evidence is not yet all in.

That the average citizen has so little appreciation of the extent to which his in-

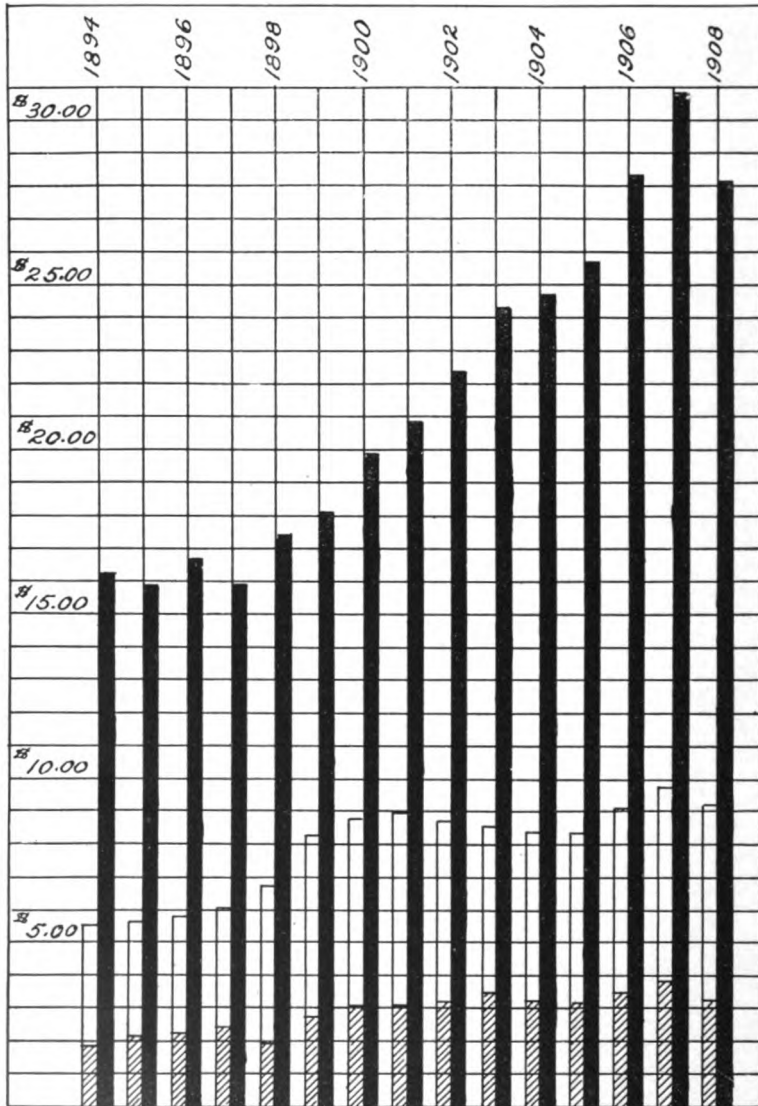


DIAGRAM NO. 1

AVERAGE PER CAPITA CONTRIBUTIONS TO REVENUES OF UNITED STATES GOVERNMENT AND UNITED STATES RAILWAYS, 1894-1908. LEFT-HAND COLUMNS, GOVERNMENT REVENUES; SHADED PORTIONS, REVENUES FROM DUTIES ON IMPORTS. RIGHT-HAND COLUMNS (SOLID BLACK), RAILWAY REVENUES

ple of the United States, during the years named, by the railways, alone, exceeded the duties on imports by \$22,245,000,000 and the total revenues of the National Government by \$10,711,000,000. It must

terests are affected by transportation is due mainly to the fact that, while he is continually paying transportation taxes, commonly called freight bills, he is seldom or never called upon to pay them directly.

This is equally true of import duties, internal revenue taxation, and practically his entire contribution to the support of the National Government. It is an absolute impossibility for anyone to know how much he pays either in transportation taxes or national taxes, because these are parcelled out in infinitesimal fractions of a cent on every spoonful of sugar he puts into his cup of coffee, in sums less infinitesimal but equally indistinguishable on every yard of cloth in his coat, and in other amounts, some larger, some smaller, but all equally unknown and unknowable, on everything he buys from one year's end to another. But when he is called upon to contribute his share to the expense of city, county or state, he must open his checkbook or his pocketbook, and pay the tax collector in cash or its equivalent. Then, if he forgets how much his taxes are, he can refresh his memory by looking at his receipt. It is natural and inevitable that a man should be more strongly impressed by the taxes he pays directly than by those he pays indirectly, but it does not follow that the latter are any less than the former. Let us see what the records show in reference to this matter.

In the volume on Wealth, Debt and Taxation, the Census Bureau publishes a statement of the revenue receipts for the various civil divisions of the United States for the fiscal year 1901-2. This statement covers receipts from all sources except the sale of bonds, including general property, special property, business and poll taxes; liquor and all other licenses and permits; fines and forfeits; subventions and grants; donations and gifts; interest; special assessments; fees and charges; privileges; industrial income from municipal water, electric and gas works, etc.; and all other unclassified general and commercial revenue receipts. A condensed summary of this statement, which covers nearly two hundred pages of small type, gives the following result:

REVENUE RECEIPTS	
Fiscal year ended June 30, 1902.	
States and Territories.....	\$189,165,067
Counties.....	199,119,468
Cities, over 25,000.....	424,763,472
Cities, 8,000 to 25,000.....	75,216,973
All other minor civil divisions.....	219,304,202
Total.....	\$1,107,569,242

For the same year the revenues of the National Government from all sources, including customs, internal revenue, postal revenues, and more than a score of miscellaneous sources of revenue, such as sales of public and Indian lands, profits on coinage, repayments by Pacific railways, tax on national banks, etc., were \$684,326,280. Adding this to the amount given above, we get a total of \$1,791,895,522. Turning now to the reports of the Interstate Commerce Commission, we find the gross earnings and income of the railways for that year amounted to \$1,022,703,896. A simple operation in subtraction reveals the startling fact, which

COMPARATIVE REVENUES, 1901-2

U. S. Railways.....	\$1,022,703,896
All civil divisions of U. S.....	1,791,895,522
Excess of Railway revenue.	\$130,808,374

is also shown graphically in Diagram No. 2, that railway receipts for 1902 exceeded the combined revenues of all the civil divisions of the United States, from the nation down to the township, by nearly \$131,000,000.

Government receipts were in excess of expenditures in 1902 so the total expenditures of all civil divisions were \$1,749,485,988. This means that out of the gross earnings and income of the railways for that year there could have been paid all the expenditures of the National Government—legislative, executive, judicial, diplomatic, consular, army, navy, post office, etc.; the expenditures of all the states and territories, including the District of Columbia; those of all the cities, great and small; and those of all the counties, townships and villages in the country—in short, every payment made for governmental purposes in the whole United States, except those made on the principal of public debts, and there would then have been left a surplus of \$173,217,908.

Railway revenues have been increasing more rapidly than national revenues since 1902, but no figures are available for the total revenues or expenditures of other civil divisions. It is of interest, however, to compare the revenues of United States railways with those of some of the principal nations of Europe, as is done in the following table and in a cartoon.

REVENUES OF FOREIGN NATIONS AND U. S. RAILWAYS

France.....1906	\$715,074,344
United Kingdom, 1905-6.....	700,666,869
Germany.....1906-7.....	570,563,137
Italy.....1905-6.....	470,565,700
Spain.....1906	172,767,678
Belgium.....1906	107,800,738
Austria-Hungary, 1906	72,008,078

Total revenue of governments named.....	\$2,809,506,544
U. S. Railroads, 1906-7.....	2,875,689,520

Excess of railway revenues. \$66,182,976

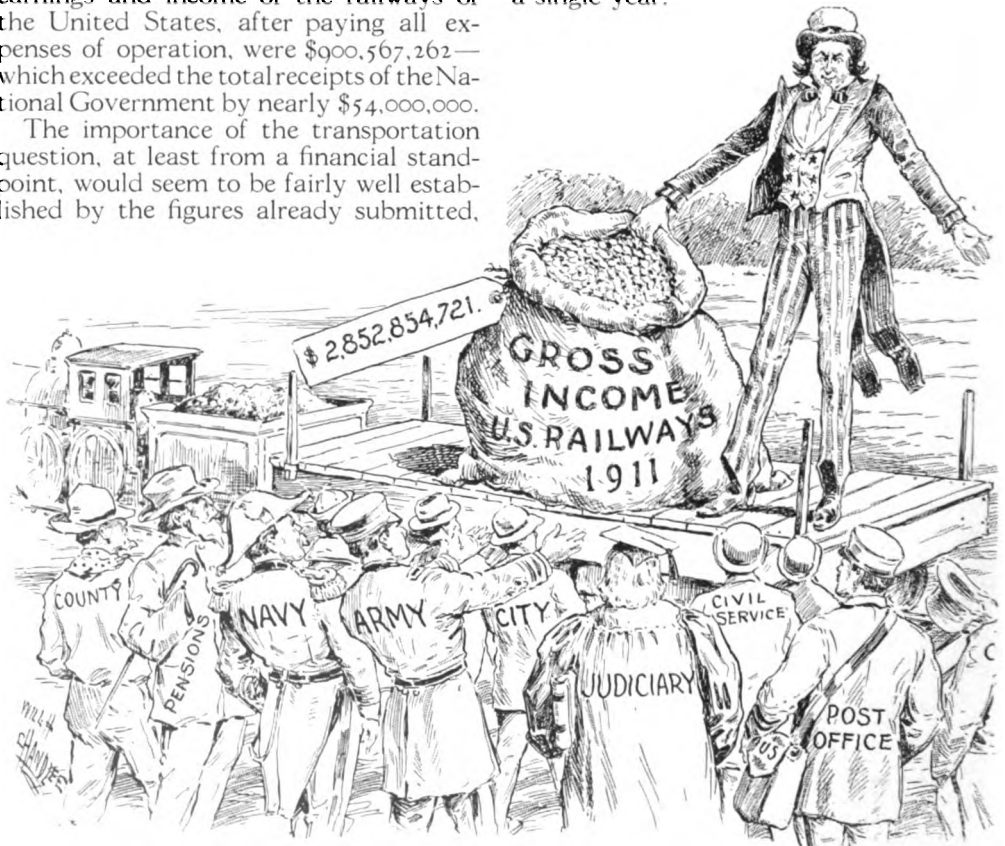
From this it appears that the total receipts of the railways of the United States for a single year exceed by more than \$66,000,000 the combined revenues of seven of the leading nations of Europe.

One more comparison is of interest. The receipts of the Government of the United States for the year 1906-07 were \$846,725,340; for the same year, the net earnings and income of the railways of the United States, after paying all expenses of operation, were \$900,567,262 — which exceeded the total receipts of the National Government by nearly \$54,000,000.

The importance of the transportation question, at least from a financial standpoint, would seem to be fairly well established by the figures already submitted,

but so far we have been comparing governmental revenues with the receipts of a single method of transportation, while there are two more which must receive at least passing notice, viz.: transportation by water and by wagon.

From a special report made by the Census Bureau it appears that the amount paid for transportation by water in the calendar year 1906 was \$294,854,532. This includes transportation coastwise on the ocean, by lake vessels, and by boats and barges on canals and rivers, but does not include lighterage or other harbor work, nor the amounts paid for ocean transportation to and from foreign ports. Estimates of the latter amount vary from \$250,000,000 to \$500,000,000. Using the lower figure for the sake of conservatism, and adding a little over \$5,000,000 for harbor work, we get \$550,000,000 as the approximate cost of water transportation for a single year.



TRANSPORTATION TAXES FAR EXCEED TAXES FOR GOVERNMENTAL PURPOSES, OUT OF THE GROSS INCOME OF THE RAILWAYS OF THE UNITED STATES FOR ONE YEAR COULD HAVE BEEN PAID EVERY DOLLAR RITORIAL GOVERNMENTS, AND ALL THE CITIES, TOWNS, VILLAGES, COUNTIES, TOWNSHIPS AND SCHOOL DISTRICTS

When we come to transportation by wagon, statistics are absolutely lacking, and, from the nature of the case, always will be. We must, therefore, use such facts as are available as the basis for an estimate. That which follows claims to be nothing more, but is believed to be conservative. The total amount of freight handled by rail and water in 1907 was, in round numbers, 1,100,000,000 tons. More than half of this tonnage, say 600,000,000 tons, was hauled to and from the railway or the waterway, by wagon, and probably a third as much more was delivered to its destination without using either boat or freight car, making a total of 800,000,000 tons moved by wagon. The Secretary of the Farmers' National Congress estimates the average wagon haul at eight miles. The Office of Public Roads of the Department of Agriculture estimates the average cost of wagon transportation at twenty-five cents per ton per mile. Combining these estimates of tonnage, distance, and cost, we get \$1,600,000,000 as the probable cost of wagon transportation in the year named.

If now we add together these various amounts, we get the following result:

TRANSPORTATION TAXES IN THE UNITED STATES	
Railway transportation. 1906-7...	\$2,875,689,520
Wagon transportation... 1906-7...	1,600,000,000
Water transportation... 1906.....	550,000,000
Total.....	\$5,025,689,520

This is considerably more than half as much as the combined revenues of all the nations of the earth, six times as much as

the revenues of the United States Government, and more than fifteen times as much as the amount collected by the United States as duties on imports. While based to a considerable extent on estimates, it is believed that these are thoroughly conservative, especially as nothing is included for the transportation of passengers by wagon, and the revenues of electric roads, express companies and other subsidiary forms of transportation have been omitted.

There are those who claim that the cost of the tariff to the people is not limited to the amount of the duties on imports, since the protected manufacturer is enabled to charge higher prices for his products than he could otherwise obtain. It is not the purpose of this paper either to attack or defend the policy of protection in general or the rates and schedules of the existing tariff law. Nor is it intended to express the opinion that the rates of transportation by any method are higher or lower than they should be. The facts and figures thus far presented have been submitted solely for one purpose, and that is to call attention to the importance of the transportation question and the magnitude, both absolute and relative, of the charges paid for transportation services.

It has been shown that the gross revenues of United States railways exceed the combined revenues of seven of the principal nations of Europe; that the net earnings of these railways exceed the entire revenue of our National Government; and that if the cost to the people because of the tariff is ten times as great as the duties on imports it must needs be one-half greater still before it would equal the taxes collected in a single year by the various agencies of transportation. It is believed that this showing justifies the contention that the transportation question is one which merits the most careful consideration of the citizenship, and the best thought of the statesmanship, of the country.

II.

THE TRANSPORTATION TRINITY

There are three principal methods of transportation: the highway, the railway, and the waterway, or, as we may call them for the sake of both brevity and alliteration, road, rail, and river—the "Three



NATIONAL, STATE AND LOCAL SPENT BY THE NATIONAL GOVERNMENT, THE STATE AND TERRITORIES OF THE COUNTRY—WITH \$173,217,908 LEFT OVER

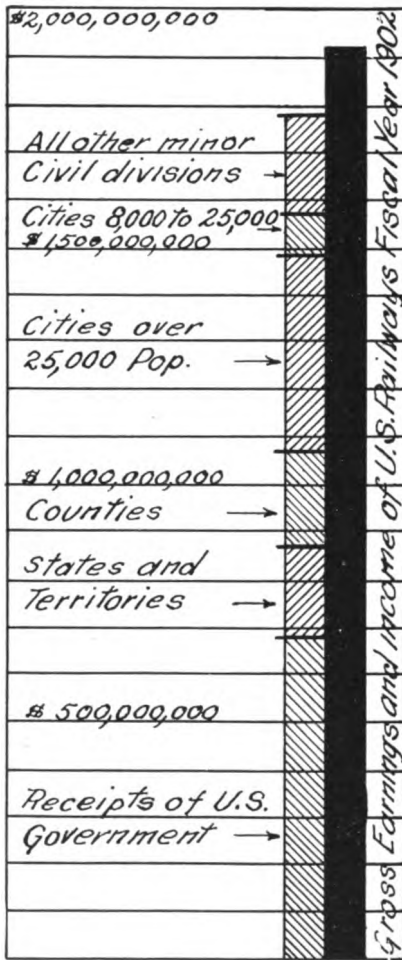


DIAGRAM NO. 2
COMPARATIVE REVENUES OF RAILWAYS AND ALL
GOVERNMENTAL DIVISIONS OF THE
UNITED STATES

R's" of transportation. These three transportation agencies differ in many important respects. The distinguishing characteristic of the roadway may be called availability—a cart, or a pack horse, can go where a railroad is a commercial, if not an engineering, impossibility—and the railway can go where no river exists and a canal would be too costly. The distinguishing characteristic of the railway is speed, while that of the waterway is economy. It is said that a horse, or its mechanical equivalent, a horsepower, can move two tons at the rate of three miles an hour in a wagon on a fairly level road, fifteen tons in a car on a railway, and ninety to one hundred tons in a boat of proper shape on a waterway which has

the width and depth required for its use.

In exact correspondence with these physical facts we find that the estimated cost of wagon transportation on the average road in the United States is 25 cents per ton-mile, which might be reduced to 10 cents on a first-class road; the average rate received by the railroads of the United States in 1907 was 7 and 82-100ths mills per ton-mile, while the average charge per ton-mile on the goods carried into and out of Lake Superior in that year was 8-10ths of one mill. We have, as yet, no completely improved rivers, but the Army Engineers say that when the work now under way on the Ohio River is finished, transportation can be conducted thereon for one-half a mill per ton-mile.

Translating these microscopic figures into the language of everyday business, we find they mean that a dollar will carry a ton of freight 4 miles on an average road, 10 miles on a first-class road, 127½ miles on a railroad, 1250 miles on the Great Lakes, and, if the estimate of the Army Engineers is correct, 2,000 miles on a river of the first class when completely improved. From this it is plain that good roads are vastly better than poor roads, but that wagon transportation is too costly for long-distance traffic. Its essential function is the carriage of small loads over short distances. It is equally plain that in economy the waterway surpasses the railway as far as the railway exceeds the highway, and it follows that the essential function of the waterway is the carriage of large loads over long distances. The railway occupies a position intermediate between the highway and the waterway in availability, economy and essential function.

The truth is that each of the three—road, rail, and river—is an integral and indispensable part of a threefold transportation system, which would be radically defective if any of the three were lacking, and which can only reach the highest efficiency of which it is capable when there is a symmetrical development of all the parts. How shall this development be secured? Since the highway is essentially local in its field of action, it seems proper that the work of highway improvement, and the provision of funds therefor, should be left to local or state initiative. The railway, being continental in its field of

action and the most important existing agency of both intrastate and interstate commerce, is properly subject to state and national regulation, but it is evidently the intention of the people to leave the construction and operation of railways for an indefinite period under private or corporate control. There remains for consideration the advisability of waterway improvements and the methods and agencies by which such improvement is to be accomplished.

Waterways produce benefits in three principal ways: first, by the direct saving in the cost of goods actually carried by water; second, by the indirect saving through the reduction of railway rates due to the competition of water routes; and third, by what may be called a creative effect. It is this third effect, which includes, and largely depends upon, the other two, which it is intended briefly to discuss. There is no better way of determining the effect which waterways will produce than by a study of the results which they have produced; hence some illustrative instances will be cited.

It was the general opinion of business men in the earlier years of the nineteenth century that Philadelphia would be the principal city of the Atlantic coast. As a matter of fact the population within the present boundaries of Philadelphia was greater than the combined population of New York and Brooklyn up to 1820, and in 1821 Massachusetts rivaled New York in the volume of exports. By 1840 the combined population of New York and Brooklyn exceeded that of Philadelphia by nearly 100,000, and in 1841 exports from New York were nearly three times as large as those from Massachusetts. A history of Philadelphia, published in 1884, says: "Be the cause whatever it may, the fact stands out prominent that, from the completion of the Erie Canal, New York became what Philadelphia previously had been—the commercial emporium of the United States."

Beaten in commerce, Philadelphia sought to maintain her supremacy in manufactures and for a time succeeded, only to see, a little later, this prize also slip out of her grasp. New York State was hopelessly behind in manufactures in 1830, the value of her product being but \$7,000,000 as against \$8,000,000 for Connecticut, \$11,-

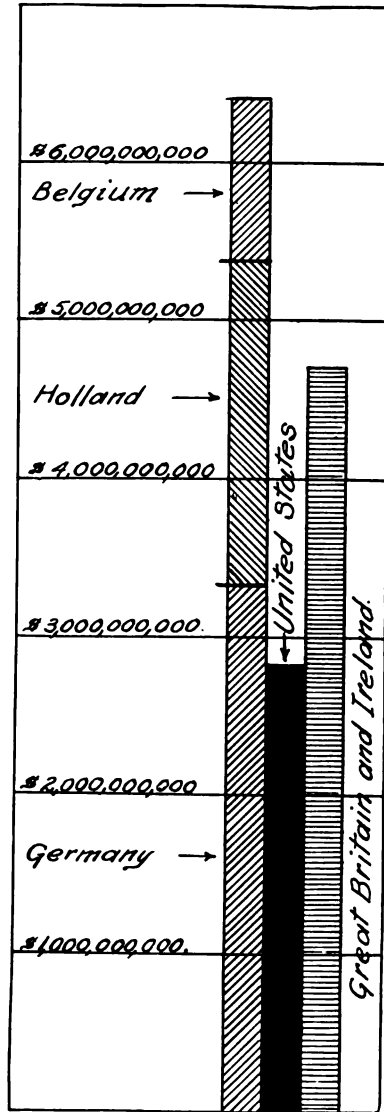


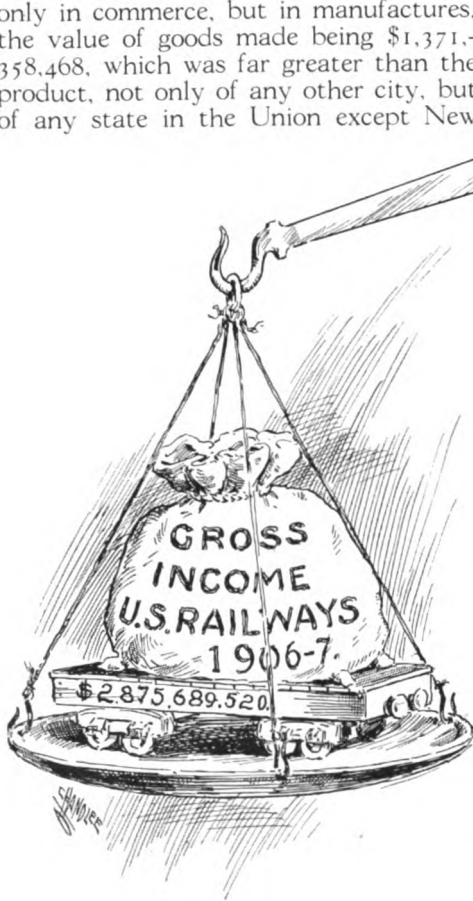
DIAGRAM NO. 3
COMPARATIVE AMOUNTS OF FOREIGN COMMERCE
OF THE UNITED STATES AND CERTAIN
OTHER NATIONS

000,000 for Pennsylvania, and \$63,000,000 for Massachusetts. Ten years later, New York had advanced to first rank with products valued at \$96,000,000 against \$74,000,000 for Massachusetts and \$64,500,000 for Pennsylvania.

But the objection may be made that, even if the Erie Canal were the sole cause of these changes, this all happened before the coming of railways. That is true, but it is to be noted that the coming of

the railway has not deprived New York of the lead she gained before its arrival; she held the first place in 1830 and has held it ever since. In 1900 New York, including Brooklyn, was supreme not only in commerce, but in manufactures, the value of goods made being \$1,371,358,468, which was far greater than the product, not only of any other city, but of any state in the Union except New

eighties. Manchester seems to have been attacked by what might well be called industrial leprosy. Many mills and factories were closed and some were moved away. Block after block of stores and



HERE ARE SEVEN OF THE LEADING NATIONS: GREAT BRITAIN, FRANCE, SPAIN, ITALY, BELGIUM, GERMANY AND AUSTRIA-HUNGARY. THE COMBINED REVENUES OF THESE NATIONS WAS LESS BY \$66,000,000 THAN THE INCOME OF THE UNITED STATES RAILWAYS IN 1906-7. IS THE TRANSPORTATION QUESTION AN IMPORTANT ONE?

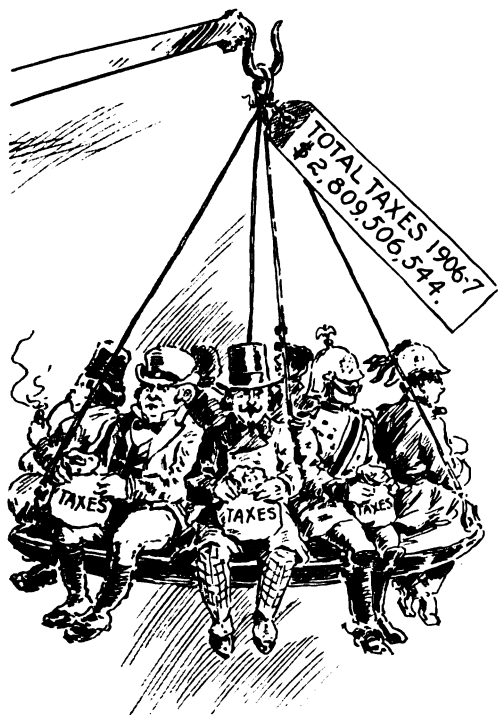
warerooms were empty and more than five thousand houses stood tenantless. It was evident that some remedy must be found if the life of the city was to be saved.

Twenty years later a marvelous transformation had been wrought. The silent mills and factories were humming with industry, and scores of new ones as well. All the vacant houses, stores and ware-rooms were again in use and twenty thousand new ones had been built and occupied. Today Manchester, with its suburbs, has a population of nearly 1,000,000, and is the nearest port for a district occupied by 8,000,000 busy, prosperous people. The cause of the disease was costly transportation, and the remedy which worked this modern miracle, bringing growth and life in the place of decay and death, was a ship canal.

But it may be objected that the ship canal made Manchester an ocean port, while the main question in the United States is the advisability of improving our interior waterways. Then let us go over into the heart of Germany, far from the sea and more than twenty miles from the Rhine, to the banks of a little, shallow river called the Main. Founded by the Romans about A. D. 150, in after years the residence of Charlemagne, Frankfort, by the slow growth of centuries, had

York or Pennsylvania. But let us pass to an instance which happened after railways were well established.

The first railway came to Manchester, England, in 1830, and many others came later. Situated only fifty miles from Liverpool, one of the greatest ports of the world, and surrounded by abundant supplies of coal, the city and its immediate suburbs had grown by 1881 to a population of more than 500,000, and had become the seat of great manufacturing enterprises and the chief center of the cotton spinning industry. One of the most dreadful of all diseases is leprosy, in which the flesh and bones slowly rot and slough away, leaving a ghastly wreck more hideous than death. In the early



reached a population in 1880 of some 140,000. Something happened to make a wonderful change in the rate of growth, for Frankfort gained more in the next twenty years than in all the centuries before, and today, with the suburbs which lie close around her borders, has a population of nearly 500,000.

The "something" that happened was the canalization of the river, completed in the fall of 1886, which made the Main a part of the Rhine navigation system, and which, while it did not allow ocean vessels to come direct to Frankfort, did enable that city to ship goods all the way by water to or from any port on all the Seven Seas. The locks have since been lengthened and other improvements made so that much larger boats can use the river, and Frankfort, which spent some \$2,000,000, back in 1886, to equip her harbor, is now spending \$17,600,000 on a new and greater harbor to properly care for her swiftly growing trade.

But it may be objected that this is an isolated and exceptional case, for the chronic objector is always in evidence—especially when the improvement of waterways is proposed. Then let us

broaden our view to include not only the whole of Germany, but also Holland and Belgium, for these three countries belong together geographically and commercially, although politically separate. They occupy so large a place in the world's activities that it is hard to realize how small they are in area. Holland and Belgium together are almost exactly the size of West Virginia. Take the combined area of the three and lay it down on the State of Texas and there would be enough territory left uncovered to make the State of Maine. Their size, as compared to that of the whole United States, is utterly insignificant; how do they compare in other respects—for instance, in foreign commerce?

For the fiscal year 1908 the foreign commerce of the United States, that is the sum of the imports and exports, amounted to \$2,845,044,087. That is a large sum, standing by itself, but it seems to shrink a good deal when put alongside the corresponding figures for the other countries named. For to this sum, large as it is, we must add one billion, two billions, three billions of dollars, and then pile nearly six hundred millions more on top of that to equal the \$6,433,347,839 which represents the foreign trade of three little countries which we could lose in one of our states. (See Diagram No. 3.) Germany alone exceeded the United States by \$502,000,000 and Holland and Belgium combined exceeded it by over \$241,000,000—and it should be noted that these figures do not include the transit trade, but represent imports for consumption and exports of domestic merchandise.

Here are three countries which have only one-thirteenth the area of the United States, a population smaller by 14,000,000, less than half the accumulated wealth, and a soil and climate no better, to say the least. What do they have which we have not, the possession of which may explain this astounding difference in the amount of foreign commerce?

The answer is not far to seek—for in the three countries named the "transportation trinity" is more completely and symmetrically developed than it is anywhere else in the world. They have far better wagon roads than we have and a much greater mileage in proportion to

area, although exact statistics are not available on this point. They have a railway system, which they claim is adapted to their needs and conditions, although criticized in some respects by American railway men; but they have two and one-third times as much railway in proportion to area as we have, for their 41,200 miles gives them one mile of road to each 5.6 square miles of territory, while our 230,000 miles of road (in 1907) gives an average of one mile of railway to each 13.1 square miles of area.

Lastly, and most important of all, they have a system of navigable waterways which is not merely unsurpassed, but entirely unequaled elsewhere. According to the "Statistisches Jahrbuch für das Deutsche Reich," Germany has 8,545 miles of waterways classed as navigable. But this includes the estuaries of the larger rivers which are used mainly by seagoing vessels, certain canals built partly for drainage purposes, and some small streams which are only occasionally navigated. Omitting these, there are 6,215 miles of important inland waterways which are in constant use. From other official sources we find that Holland has 2,960 and Belgium 1,367 miles of canals and navigable rivers, making a total for the three countries of 10,542 miles of waterways.

If Texas had 150,000 miles of macadamized wagon roads, 47,000 miles of railroad (to say nothing of 10,000 miles of electric and narrow-gauge lines), 12,500 miles of navigable waterways, a population of 87,000,000, and a foreign commerce more than two and a half times as great as that of the United States, it would present a scene of concentrated human activity exactly similar to that which exists in the three countries under consideration.

Diagram No. 3 includes, in addition to the foreign trade of Germany, Holland, Belgium and the United States, that of Great Britain and Ireland, which for 1908 was \$4,721,000,000. Many causes have combined to give the United Kingdom a foreign trade which is greater than that of any other country in the world—incomparably greater if area and population be considered—but the foundation, on which all other causes rest, is the fact that no spot in all the British Isles is a hundred miles from the sea. There is only one

other country which has a foreign trade worthy to be compared with that of the nations already named. That country is France, which is almost identical in size with Germany, and had a foreign commerce of \$2,063,000,000. And France has 10,350 miles of navigable waterways, of which 7,485 are regularly used.

But the chronic objector insists that conditions are not the same in the United States as in Europe. Doubtless there are differences, but there are also many points of similarity. In Europe the larger cities are on the waterways, and the same thing is true in the United States. By the census of 1900, there were twenty-four cities which had a population of more than 150,000 each, only one of which was not on a navigable waterway. In Europe the principal manufacturing regions lie along the waterways. In this country the states that touch the lakes rank first, second, third, fifth, eighth, ninth, tenth, and thirteenth in value of products; all the intermediate positions are held by states that touch the ocean; while New York and Pennsylvania, which rank first and second, are the only states which touch both the lakes and the ocean.* Turning to cities, we find twenty-two which reported a product of more than \$65,000,000, and again there was but one not on a navigable waterway.

Search where you will throughout the civilized world and you will find this thing to be true—that the largest cities, the densest population, the greatest development of industry and commerce are to be found in those regions which are most abundantly supplied with transportation facilities, and especially with waterways. This is not an accident; the two facts stand related as cause and effect. Supremacy in commerce is not merely coincident with, but consequent upon, economy of transportation. There are three ways which lead to the growth of cities, the development of states, the prosperity of nations: the highway, the railway, and the waterway—and the greatest of these is the waterway.

*NOTE:—Pennsylvania touches the ocean, not literally but commercially, since its chief city, Philadelphia, is an important seaport.

EDITOR'S NOTE:—In the second installment of "Creators of Prosperity" which will appear in the August number, some of the objections made to the improvement of waterways will be considered and answered.

AT THE GETTYSBURG REUNION

By JEROME FANCIULLI

*"THESE survivors of that great battle have given to the world, half a century later, the most remarkable demonstration of the brotherhood of man ever chronicled by historians. * * * * If the youth of the nation could have witnessed the scene which took place in the great assembly tent at the reunion on the afternoon of Monday, June 30. * * * the future protectors of the nation's honor would have learned a lesson of brotherhood and patriotism which would have left an indelible impression."*

TWO old men, tall and spare, clad in gray uniforms and wearing the inevitable broad-brimmed gray slouch hats, stepped from a train at the railroad station at Gettysburg, Pa., and slowly pushed their way through the platform crowd.

"Johnny! Oh, Johnnies!" hailed a voice behind them.

Slowly the two Southerners turned as they recognized their war-time sobriquet. A smile spread over their kindly, wrinkled faces as they caught sight of a robust, gray-haired man wearing a uniform of army blue and a small military cap that identified him as a veteran of the Union Army forcing his way toward them with his hand extended and his countenance conveying a welcome that needed no speech to confirm its sincerity.

"I'm glad to see you here," said the Northerner as he grasped a hand of each of the Southerners. "You don't look nearly so dangerous as you did fifty years ago," he added.

"It's good to see you, Yank," was the friendly reply of one of the men in gray, and guided by one who had fought against them half a century before, the first two Confederate soldiers to arrive at the reunion celebration of the battle of Gettysburg made their way through the town's crowded streets in the direction of the battlefield, where the great tent city housed for a week more than fifty thousand veterans of Blue and Gray.

This friendly welcome from a former foe and the eager, happy response with which it was received at once illustrates the purpose of the Gettysburg reunion,

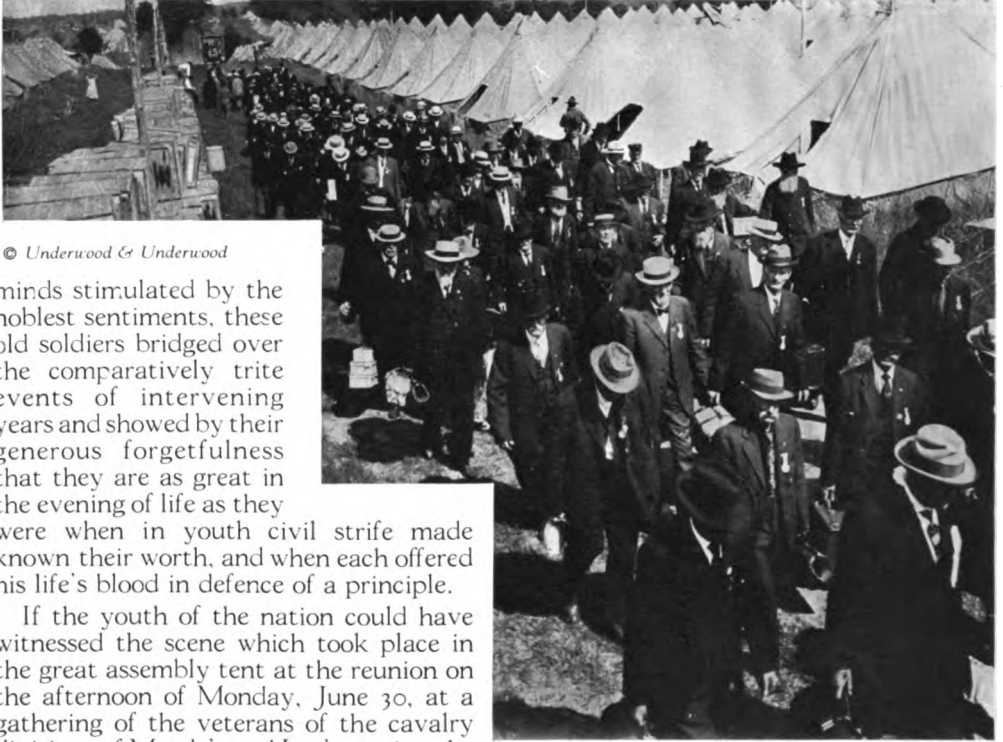


the joy of forgiving which dominated the entire encampment, and the fact that an opportunity to express those sentiments of brotherly love, made possible only by the passing of time, was all that was needed to bring about the complete eradication of the sectional bitterness that resulted from the War between the States.

That incident in the railroad station at Gettysburg on the Sunday preceding the

formal dates of the reunion, July 1st to 4th, was significant; it was the first intimation any one had as to the probable outcome of this altruistic enterprise. It was a skirmish between the pickets of peace in a battle of sentimental recollections and a contest for chivalrous honors which has consecrated to peace and happiness the ground on which these same men fought one of the world's bloodiest struggles fifty years before. These survivors of that great battle have given to the world, half a century later, the most remarkable demonstration of the brotherhood of man ever chronicled by historians.

If virtue is its own reward, the happiness that has been given to more than fifty thousand Americans, who battled for the principles they believed in half a century ago, is the compensation the people of the United States have received for the enormous expenditures that have made possible that magnanimous evidence of the grateful appreciation of a newer generation for the sacrifices made and the bravery displayed by the soldiers of 1861 to 1865. Living again in the days of their youth, with their hearts stirred and their



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minds stimulated by the noblest sentiments, these old soldiers bridged over the comparatively trite events of intervening years and showed by their generous forgetfulness that they are as great in the evening of life as they were when in youth civil strife made known their worth, and when each offered his life's blood in defence of a principle.

If the youth of the nation could have witnessed the scene which took place in the great assembly tent at the reunion on the afternoon of Monday, June 30, at a gathering of the veterans of the cavalry divisions of Meade's and Lee's armies, the future protectors of the nation's honor would have learned a lesson of brotherhood and patriotism which would have left an indelible impression.

At the invitation of the survivors of Buford's division of Federal cavalry, the men who drove back the Confederate scouts and outposts on the day prior to the opening of the great battle, several hundred Northern and Southern cavalrymen gathered in a fraternity made possible only by the recollections of the hardships of the war and the respect which brave fighters have for each other. Occupying a place of honor in this gathering were six fine-featured, wistful, warm-hearted matrons, whose silvery hair identified them with a generation that is fast passing away. One of them had a silk American flag pinned across her bosom. These six were all that could be found of the hundred or more little school girls who fifty years before had welcomed with flowers and songs the defenders of the Union as they rode through the streets of Gettysburg in pursuit of the Confederates that had occupied the town the night before.

"TRAMP, TRAMP, TRAMP, THE BOYS ARE MARCHING." OLD SOLDIERS ARRIVING IN CAMP ON THE GETTYSBURG BATTLEFIELD

With heads thrown back proudly, and with tears coursing down their cheeks, these women sang to the Boys in Gray, as well as the Boys in Blue, stirring those hardy fighters to unrepressed weeping and creating a scene so impressive that its memory is more as of a dream, as of something too wonderful to have actually taken place.

Something was necessary to bring this riot of sentiment to a climax. Big men, strong physically and mentally, were sobbing like children. The thin, high-pitched voices of the women singing "Rally Round the Flag, Boys," must have reminded them of the childish voices that greeted them with that same song fifty years before. As verse after verse was sung to the accompaniment of violent sobs and the heavy breathing of old men stirred by the scene, the tenseness was bordering on a state of hysteria.

Just as the last feeble note of the song vibrated in the impressive stillness, the "rebel yell" brought relief to the situation.

The climax had come and it brought with it the relief afforded by wild enthusiasm. Men tumbled over each other to embrace the tall Confederate veteran who had paid this spontaneous, sincere tribute to those six women of the North.

Overwhelmed by the storm of approbation that centered in him, C. B. Goodman, of Cumberland, Virginia, the man who had broken down the last barrier in the way of complete reconciliation between North and South, was too embarrassed to make reply to the greetings and appreciative remarks of the Union veterans who crowded about him. Radiating happiness, he was at last able to give utterance to the thoughts that were plainly seeking expression, and turning to those about him, he said:

"Well, boys, I'll tell you just what I think about it. We were brothers, and when brothers fight, they fight to a finish—no two men fight harder; but the one who wins runs the farm."

This simple farmer of the Old Dominion had expressed in these few commonplace words the thought that embraced every sentiment that was exhibited at that great reunion. To him the sons of the North and South are brothers, they fought hard and well, and the winners were entitled to run the farm. To these words he added his own action to demonstrate

that the fight had been forgiven and that the brothers have again joined hands to guide the fortunes of the family estate.

The speeches that were made by the President of the United States, the Vice-President, the Speaker of the House of Representatives, and by the many Governors, statesmen and prominent veterans at various times during the four-day celebration added nothing to the words of Farmer Goodman; they merely embellished his remarks. The numerous reunions of former foes, which took place daily; the repetition of Pickett's famous charge against the Philadelphia brigade of the Union Army entrenched on Cemetery Hill, with handclasps as a climax in place of death; and the many individual scenes of sentimental fraternization emphasized the significance of the Virginia farmer's words.

History records no precedent for this exhibition of eradication of after-war animosities which has just been staged on the scene of the greatest battle in American history. It was a demonstration at which the sentiments of the humblest veteran overshadowed the best rhetorical efforts of the President of the country and the other distinguished speakers. It was a gathering which assures the future solidity of the Union and the complete wiping out of sectional prejudices, and augurs well for

"HOWDY, YANK"!—"HELLO, JOHNNY REB"!

SOMETIMES IT WAS A QUESTION WHETHER THE LIGHT THAT SEEMED TO TRANSCEND THE FACES OF THESE FORMER FOES CAME FROM THE SUNSHINE WITHOUT OR THE JOY WITHIN



the success of the movement in the interest of universal peace and the fraternity of nations.

That the nations of the civilized world were not invited to have representatives present to witness this great event was the only oversight in connection with the preliminary arrangements. The Gettysburg reunion of the Blue and the Gray has been not only a lesson of far-reaching effect to every American, but it has been an exhibition to the nations of the world which places this country in the vanguard of the forces working for progressive civilization. It would have conveyed an important meaning to every ambassador of a foreign country who might have witnessed it.

Providence looked with favor on this pledge of brotherhood and the elimination of all animosity of which it was a living proof, for during the seven days on which this remarkable assemblage sweltered amid the inconveniences of camp life, but

nine deaths were recorded. Add to that almost unbelievable fact the record of the weather, which shows that the temperature was not as high as normal, that the sun shone with the exception of but one hour, during which a cooling rain allayed the dust, as if Boreas was bent on catering to the comforts of the veterans, and that a breeze made the numerous shady places as comfortable as any summer resort could be, the impression conveyed is that this fraternization of former foes took place with divine watchfulness and approval.

As in the case of many other big movements, the origin of the suggestion from which grew the fiftieth anniversary celebration of the Battle of Gettysburg is obscure. It is not known which, if any, individual is entitled to the credit for the idea. The first tangible step in bringing about the reunion was the act of the Pennsylvania legislature in providing five thousand dollars for the expenses of a



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PICKETT'S CHARGE

ONE MOST INTERESTING INCIDENT OF THE REUNION WAS A REPRODUCTION OF PICKETT'S FAMOUS CHARGE, BUT WITH CHEERS AND HANDCLASPS AS A CLIMAX INSTEAD OF BLOODSHED AND DEATH



AWAITING THE "ONSLAUGHT"—OF FRIENDS THIS TIME, NOT FOES
JUST FIFTY YEARS AGO THESE GRIZZLED VETERANS, WHO ARE AMONG THE FEW NOW LEFT OF THE DEFENDERS OF DEVIL'S
DEN, STOOD SHOULDER TO SHOULDER WITH THEIR COMRADES, BAYONETS DRAWN, AWAITING
THE TERRIFIC ONSLAUGHT OF THE CONFEDERATES

committee of Union Army veterans to proceed with plans for carrying out the celebration idea. This was done in May, 1909.

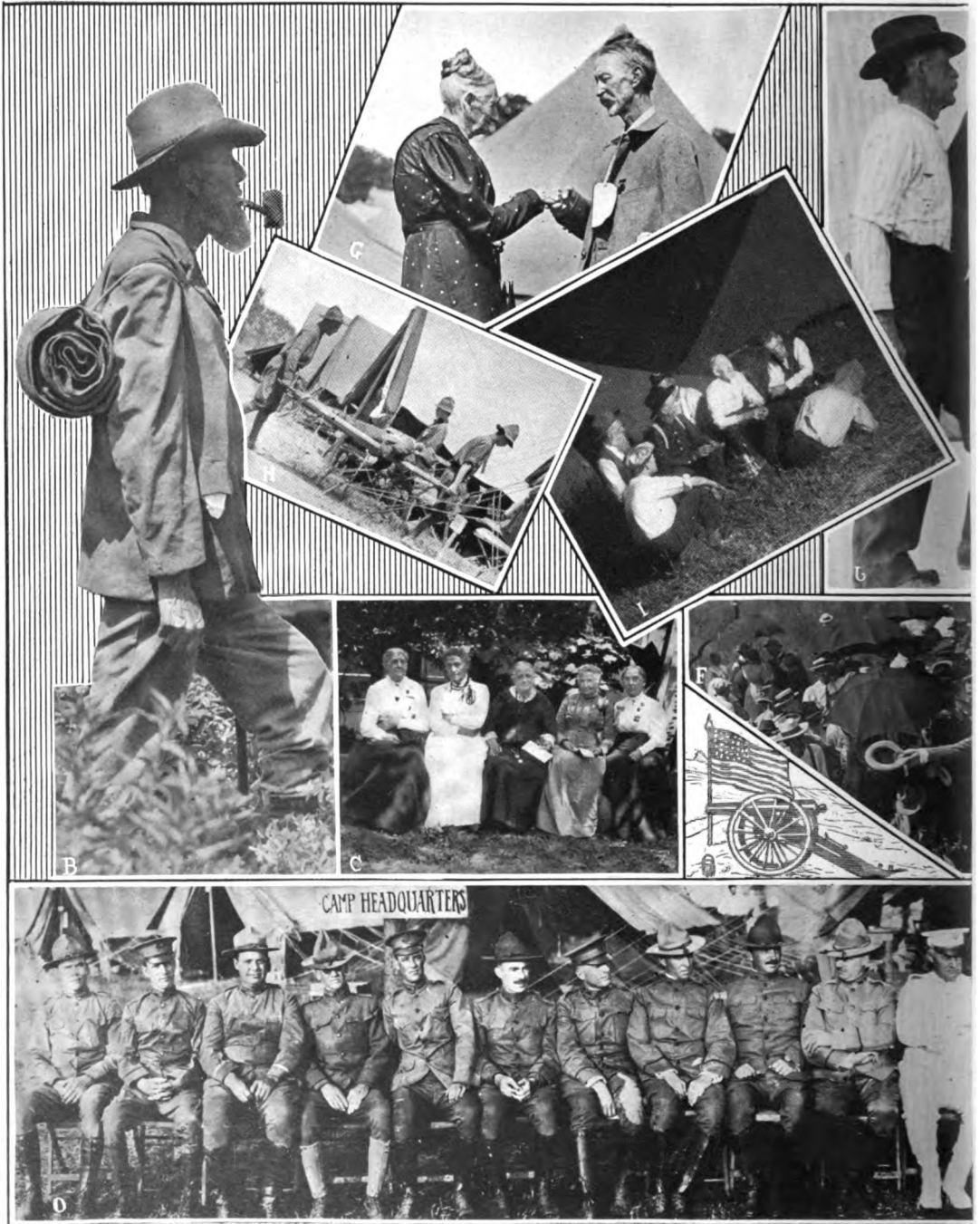
With increased appropriations by the State of Pennsylvania, which provided a total fund of four hundred and fifty thousand dollars, and an appropriation of one hundred and fifty thousand dollars by the National Government, the movement became the biggest of its kind ever attempted. The various States were invited to share the work of making the reunion a success and many of them appropriated large sums to cover the expense of transporting to Gettysburg the veterans living within their borders. Each State had a representative on the celebration commission.

Estimating the depreciation in the value of the equipment provided by the National Government, the moneys spent by the veterans themselves in attending the reunion, and the various other expenditures not covered by appropriations,

and adding to the result the funds that were provided by the individual States and the Government, it will be found that the Gettysburg reunion involved an outlay of more than two and one-half million dollars.

The most tangible result of this costly celebration was the happiness that it gave to the fifty-five thousand or more veterans who were able, in their declining years, to meet together as brothers amid peace and prosperity where fifty years before they had fought each other surrounded by wounded and dying comrades. These millions were well spent if the only result of the reunion was to give to fifty-five thousand old men the privilege of calling "comrades" the men they would have been glad to kill in the days of their youth. While it may be true that time has done much to wipe out the resentment to which the war gave birth, it remained for the Gettysburg reunion to make the reconciliation complete.

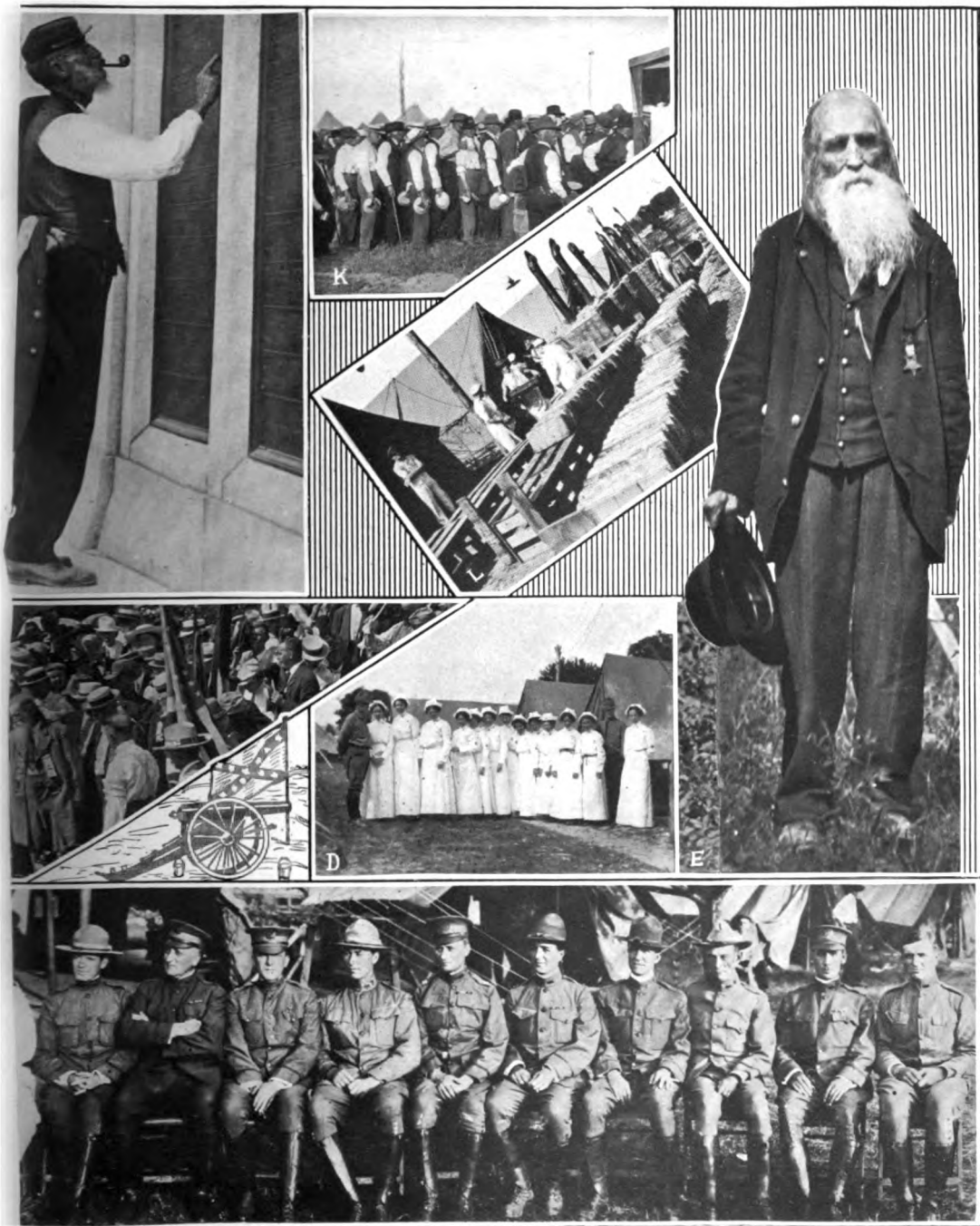
Compared with the display of brotherly



Photos Underwood & Underwood

INTERESTING PEOPLE, SCENES AND INCIDENTS AT

PICTURE AT BOTTOM IS OF THE REGULAR ARMY MEN IN CHARGE OF THE CAMP, BRIG.-GEN. HUNTER LIGGETT IN CENTER, BLOODY ANGLE. FIGURE AT EXTREME RIGHT, CORPORAL H. P. GATES OF VERMONT, AGE 84. LOWER CENTER PICTURE IS OF HELPED CARE FOR THE WOUNDED, GREETING AFTER FIFTY YEARS A BROTHER IN ARMS TO HER HUSBAND. CENTRAL AMONG THE MISSING. OTHER PICTURES ARE OF THE BOY SCOUTS CARRYING THE OLDEST VETERAN, AGED 110 YEARS, WAS GREATLY ENHANCED BY THE BOY SCOUTS; AN OLD VETERAN GIVING TO THOSE GATHERED AROUND AFTER THE WELFARE OF THE VETERANS DURING THE ENCAMPMENT, AND THE REMNANT OF THE WOUNDED AND DYING DURING THE THREE DAYS' BATTLE FIFTY YEARS



THE REUNION OF BLUE AND GRAY AT GETTYSBURG

FIGURE AT EXTREME LEFT, M. F. TURPEN, COMPANY D, 53D VIRGINIA INFANTRY, IN UNIFORM HE WORE FIFTY YEARS AGO AT CAPTAIN DOUTHAT TELLING OF THE TERRIBLE CARNAGE AT BLOODY ANGLE. TOP LEFT CENTER, A CONFEDERATE NURSE WHO PICTURE, VETERANS SEEK ON A SLAB OF THE PENNSYLVANIA MONUMENT THE NAMES OF COMRADES WHO ARE NOW TO THE HOSPITAL, OVERCOME WITH HEAT. THE COMFORT OF THE VETERANS AND THE SUCCESS OF THE REUNION A CAMP FIRE A THRILLING RECITAL OF THE BATTLE; THE RED CROSS NURSES OF TO-DAY WHO LOOKED NURSES WHO GAVE SUCH COMFORT, HELP AND AID AS THEY COULD TO THE "FALLEN ARMY" OF THE AGO WITHOUT THOUGHT OF WHETHER THEY WERE FRIEND OR FOE.



FIGHTING THEIR BATTLES O'ER AGAIN

CARRIED AWAY BY THE SPIRIT OF THE OCCASION, THE VETERANS WERE LIKE BOYS LET LOOSE FROM SCHOOL, AND MANY FENCING BOUTS TOOK PLACE, WITH CANES INSTEAD OF SWORDS

love, the other effects of the great encampment are robbed of much of their real significance. That it has taught the younger generation of Americans to venerate the soldiers of the Civil War, regardless of the color of their uniforms, far more deeply than they have ever done in the past was evidenced by the faithful attentions of the officers and soldiers of the Regular Army; the humanitarian acts of the Red Cross nurses and the civil and military physicians and surgeons, including some of the country's greatest medical men; the courteous, kindly and unselfish attentions of many Governors, Congressmen and prominent persons; the sympathetic accounts of the events of the week given by newspaper men, who were seen frequently with tear-dimmed eyes while writing their stories; and, more impressive than all that evidence, the devotion, the untiring willingness, and the love for the old soldiers displayed by the hundreds of Boy Scouts who acted as guides, messengers, first aid to the injured, and servants to this Army of Peace.

One of the most surprising features of the encampment was the entire absence of injury and the remarkably small death

list. Fifty-five thousand men, many of them feeble or crippled, were literally dumped into an improvised station on a one-track railroad spur without injury to a single one. And the same number were safely put aboard their trains at the close of the reunion. The fact that no accident occurred under these conditions demonstrates the efficiency and adaptability of the officers and men of the American army. Capt. A. H. Huguot, of the Quartermaster's Corps, Capt. James Justice and Lieutenant Wills, of the Fifth Infantry, and Lieut. A. M. Burdette, of the Seventeenth Infantry, the four officers who had charge of this big transportation problem, were sometimes on duty from five o'clock in the morning until one or two o'clock on the following morning.

In this great encampment there were some fifty-five thousand veterans whose average age was seventy-two years and many of whom were suffering from chronic illness or temporary indisposition. Calculations based on scientific data show that at least seventy deaths were to be expected. Preparations were made by the State health authorities and the War Department for the possibility of 500 deaths.

Remembering all the conditions—the journeys from distant parts of the country, the unaccustomed inconveniences of camp life, the intense summer heat, the feverish excitement and the excesses of food and drink usually indulged in on occasions of the kind—it is nothing short of marvelous that the total death list was only nine, or a trifle more than one-eighth as large as might have been expected if the veterans had remained at their homes.

This remarkable result was due mainly to two things, the admirable sanitary arrangements and the ample hospital facilities. The sanitary work was carried out under the direction of Major Paul C. Hutton of Fort Howard, Md., the sanitation expert of the Army. An incinerator was provided for every mess kitchen and all kitchen refuse was burned immediately after each meal. All other refuse and garbage was collected and burned in two large incinerators erected at a central point. The latrines were burned out every morning with straw and crude oil and lime was freely used wherever needed, with the result that the camp was noticeably free from flies and disagreeable odors were unknown. Thousands of the veterans learned a lesson in methods of sanitation which will undoubtedly bear fruit.

With two field hospitals, a regimental hospital and two ambulance stations in the camp proper, which were under the

direction of Lieut. Col. A. E. Bradley, Chief Surgeon of the First Division of the Army, a large hospital maintained in the town of Gettysburg by the Pennsylvania Health Department, and Red Cross emergency relief stations throughout Gettysburg and vicinity, it was possible to give immediate attention to every stricken veteran or visitor.

There was no restraint or red tape where the veterans were concerned. The instructions that were issued by Major James E. Normoyle, of the Quartermaster's Corps of the Army, who was the general manager of the camp, were to the effect that the old soldiers be permitted to have their own way in everything. Each veteran was his own master and had as his servant every man officially connected with the camp.

When the experience gained and the lessons taught by the great encampment are taken into consideration, the expenditures made for the reunion would seem to have been made to good purpose without regard to the sentimental features and the patriotic spirit aroused by the great meeting, which are beyond all price. That the American people, in this rushing commercial age, can pause long enough to give their financial and moral support to a noble sentiment, as typified by the gathering of old soldiers at Gettysburg, shows that the feeling of brotherhood must be deeply embedded in our national character.



Photo]Washington Post

THE OPENING OF THE A BRILLIANT

By CAPT. WIL

With Photographs of



Harris & Ewing

MRS. W. H. CARTER
MATRON OF HONOR FOR INTERCOASTAL
CELEBRATION

THE worthy day-dream of a protected inland waterway, cherished by Gulf Coast inhabitants for forty years, has been realized in part, and that it will be fully achieved is not to be doubted. The formal opening of the Galveston-Corpus Christi section of the Intercoastal Canal, which was fittingly celebrated at Galveston on June 12, 13 and 14, was an epoch-making event—an event of direct, material and immediate importance to the people of Texas and of substantial significance and deep interest to the people of Louisiana, who will be sharers at no distant day in the benefits of this great project. The completion of the canal will obviously make neighbors, commercially, of the inhabitants of these two splendid Southern Commonwealths who live upon

the connected bayous and along the tributary rivers, and are so afforded the means of inter-communication and an opportunity for exchanging their products, and benefits of great value will be conferred upon communities that have been utterly devoid of any channel for trade development.

This sheltered inland waterway around the Gulf Coast was an inspired vision of the Fathers; it is the child of the wisest present-day prevision and progress; it will be an enduring monument to the intelligence and perseverance of the men whose



WILMA GEORGIA MANN
HOUSTON



HAZEL ADAMS
VICTORIA



ALMA McBRIDE
DANBURY

INTERCOASTAL CANAL CELEBRATION

SON I. DAVENNY

Some of the Sponsors

names are inseparably linked with the enterprise. And surely the working out of no other purely mechanical problem can do more to bring into indestructible relations of commerce, amity and unity, the Northern and Southern sections of our common country, than the joining of the waters of the Ohio and the Mississippi with those of the commerce-bearing channel along the Gulf to the Rio Grande.

The dates fixed for the Galveston celebration anticipated by a little the actual completion of the dredging contract on the Matagorda Bay and Brazos River section of the channel, and the passage through the canal of the boats comprising the fleets from Corpus Christi and intermediate points, bound for Galveston, resulted, in some cases, in exasperating delays. The dredge had but little more than removed the final installment of mud that separated the waters of the eastern and western ends of the canal, when the impatient "Commodores" and their craft were waiting to sail through. The channel had not yet attained the project depth of five feet and, with boats in the fleets drawing $4\frac{1}{2}$ feet, the inevitable happened and some of the craft, with the unfortunate mariners that constituted the respective crews and other patriotic participants in the event who were aboard, were stranded, while their timely arrival at Gal-



C. S. E. HOLLAND
PRESIDENT INTERSTATE INLAND WATERWAY
LEAGUE



GRACE SMITH
COLLEGEPORT



LOULA BELLE SALLEY
MATAGORDA



LIZZIE DAVIS WESSENDORF
RICHMOND

veston was defeated. Added to the trials of delay, the voyagers were subjected to the discomforts of a downpour of rain without adequate cabin shelter, and it would not have been strange if their enthusiasm had evaporated. But, imbued with the characteristic Texas spirit, they "stood by the ship."

The launch *Gypsy*, of Corpus Christi, Capt. Andrew Anderson, was stranded a day and two nights near Freeport, but it is a legitimate subject of record, in the interest of historical accuracy, that the *Gypsy* was the one boat—and the first one

Tuesday, June 10, on board his flagship *Jimmie*, and led the way. After one full day's run of 90 miles the *Jimmie* was stranded, but the indomitable Admiral promptly transferred his flag to an automobile and reached Galveston in time to assume his place in the celebration program.

Notwithstanding the misfortunes of some of the celebrants, the water pageant scheduled as the spectacular feature of the event occurred on Thursday, June 12. The United States revenue cutter *Windom*, Lieut. C. W. Cairnes commanding, was



IRENE HUSTMYRE
ORANGE



PAULINE PENNINGTON
PORT LAVACA



LILLIAN ELLIOTT DINGLE
VELASCO

—to traverse the full 200-mile course through the canal. The departure had been made at 8.30 o'clock on Monday morning and anchorage at Galveston was reached at 9.15 Thursday night. The *Gypsy* was the flagship of "Commodore" Royall Givens of the Corpus Christi fleet and with him, when starting on the eventful trip, was Mayor Roy Miller, Vice-Admiral of the celebration fleet, who is a Texas director of the National Rivers and Harbors Congress.

Mr. C. S. E. Holland of Victoria, President of the Interstate Waterway League and Admiral of the combined fleets, had taken command at Port O'Connor on

the vantage point from which the reviewing party witnessed the parade. Besides Admiral Holland and his staff, with the other officers of the fleet, who comprised the reviewing party, were the sponsors, maids and chaperones and invited guests. Among the latter were Governor O. B. Colquitt, Assistant Secretary of War Henry S. Breckinridge, Maj. Gen. William H. Carter, commanding the Second Division of the Army, stationed at Galveston and Texas City; Brig. Gen. Clarence R. Edwards, Col. Daniel Cornman, Commander John F. Hines, of the United States gunboat *Petrel*; Lieut. Col. Charles S. Riche, Corps of Engineers, United

States Army; Mayor Lewis Fisher and Morris Stern, President of the Galveston Commercial Association.

The boats that passed in review were: *Amigo* of Palacios, *Alamo* of Palacios, *Hudie* of Houston, *Pioneer* of United States immigration service, *Idler* of Houston, *Rita* of Houston, *Vision* of Houston, *Bunco* of Port Lavaca, *Mildred* of Houston, *Oriana* of Houston, *Mabel* of Houston, *Rubaiyat* of Houston, *Virginia* of Houston, *Inola* of Houston, *Lynn II* of Houston, *Russara* of Houston, *Pastime* of Matagorda, *Zeeland* of Houston, *Monarch* of

a complimentary breakfast to the sponsors, maids and chaperones, at which Mrs. William H. Carter, matron of honor of the celebration, presided. Admiral Holland also entertained the male members of the reviewing party and guests at a breakfast. The final social function was a grand ball at the Galvez, Saturday night, June 14, in honor of the sponsors and maids of honor.

Despite the misfortunes and disappointments incident to the impatient and possibly premature use of the channel, the opening of which was celebrated, the all-



WILDAH BROOKE
ARANSAS PASS



ALPHA BUSSELL
PALACIOS



MARIE JORDT
CORPUS CHRISTI

Palacios, *Skylark* of Freeport, *Thelma* of Velasco, *Idlewild* of Velasco, *Wave II* of Richmond, *Velasco No. 4* of Velasco, *Fray Bowden* of Velasco, *Rebecca* of Galveston, *Sunflower II* of Galveston, carrying Orange delegation, and the *Alice* of Galveston.

On board the pilot ship *Wave II* was Frank B. Boddeker, 74 years of age, who has been a licensed pilot on Galveston waters since 1858 and who, in that year, guided the first vessel through the inland canal, Galveston to Columbia.

During the celebration, the Hotel Galvez was the rallying center. It was the scene of several social functions, including

pervading note of the occasion was one of satisfaction that the first link in the great intercoastal route for economical transportation along the Gulf Coast was an established fact; that the sun of a dependable promise begins to shine and that relief is certain to come from the traffic conditions that have so long burdened the State of Texas.

And this is but the beginning of a great protected inland water-route that shall ultimately connect, in bonds of friendly contact and business relations, the people of New England and those of our countrymen who are making their homes on the banks of the Rio Grande.

VIEWS & REVIEWS

SPEAKING to some members of Congress, a few months ago, Colonel Goethals laughingly said: "So much of the most difficult and costly work will be forever hidden from sight when the water is finally turned into the Canal, that I expect it will only be a few years before a Congressional Investigating Committee will come down to the Isthmus to see what we have done with all that money." It is too early to prophesy whether or not a Congressional Committee will be sent down to investigate the expenditures made on the Panama Canal, but it is unquestionably true that a much better idea of the Canal itself and of the difficulties involved in its construction can be gained by a visit to the Isthmus at the present time than by waiting until it is in readiness to carry boats between the Atlantic and the Pacific. It is doing anyone who is able to go at all a favor to urge him to visit the Canal before the first of October of this year, rather than later.

It is an error to suppose that because the Canal Zone is in the tropics the heat is unbearable in the summer time. The truth is that no such temperatures were ever known there as are recorded over a large portion of the United States during the hot spells that come in July and August. Those who visit the Canal during those months will find that a wrap is often needed at night, especially when riding. Temperatures are not excessive even at midday, and the entire absence of flies and mosquitoes tends to make a stay on the Isthmus agreeable. No one but an educated engineer can thoroughly understand the great locks unless he visits them before they are put into service, and the Culebra Cut will not be half as impressive after the water is turned in as it is at present.

ON June 27 the last gate of the sluices in the lower part of the spillway of the Gatun Dam was closed, the surface of the lake being at that time 48 feet 3 inches above sea level. Unless something unforeseen occurs these gates will not be opened again, and the lake, therefore, has started on its final rise to its appointed level. Under the average conditions as determined by measurements recorded over the watershed for the past twenty-three years, it should rise to 71 feet about the first of October. This is the date at which it is hoped to blow up the dike at Gamboa which now keeps the water out of the northern end of the Culebra Cut. President Wilson has announced his intention of being present on that occasion, if possible. A lake level of 71 feet will afford a 21-foot channel through the cut, and the full height of 85 feet above sea level, giving a channel 45 feet deep, will probably be attained about the first of December.

Gatun Lake came into existence on April 25, 1910, when the west diversion at Gatun Dam was closed and the flow from the Chagres and Trinidad Rivers was forced through the channel in the spillway. This caused the water to rise to a height of about 14 feet above the sea, but in

times of flood it rose to 18 feet, inundating parts of the Panama Railroad through the Black Swamp. On February 15, 1912, the re-located line of the railroad between Gatun and Gamboa was placed in use, and immediately afterward the removal of the old line was begun. About the same time the sluice gates were closed and the lake was allowed to rise. On November 30, 1912, it attained a maximum elevation of 56.3 feet, but at this height the water poured over an uncompleted portion of the spillway, so the gates were opened and the level reduced to about 48 feet, around which point it has been maintained until the final closing of the gates on June 27.

An indication that the great work is drawing toward completion is given by the fact that the eight huge steel cranes which handled about 98 per cent. of all the concrete which went into the Pedro Miguel and Miraflores locks have been offered for sale. The lower gates of the Gatun Locks have been tested and found watertight, but it will be well toward the first of October before the barrier which holds out the waters of the Atlantic has been removed so that vessels can reach the locks. This barrier is maintained because it supports a railway track running out on the Gatun Dam, on which some final work remains to be done.

THE Gatun Dam is recognized as the critical point in the whole canal enterprise. If a slide should fill up the Culebra Cut, the only thing to do would be to set the dredges to work and dig it out again. Sooner or later the slides will stop and the channel will be continuously open to its full depth and width, but if the Gatun Dam *The Crux of the Situation* should give way the entire Canal would be rendered useless.

While the inner slope of the dam will be revetted with stone to prevent damage by waves, its stability depends upon its weight. That it has been carefully and thoroughly built no one doubts who knows the engineers by whom it has been constructed, and when it is remembered that at the bottom of the embankment, where, of course, the greatest pressure comes, the thickness of the dam is nearly half a mile, it would seem that nothing short of an extremely violent earthquake could move it from its foundations and release the waters of the lake.

A RECENT issue of the *Kansas City Star* reports the arrival of the steamer *A. M. Scott*, belonging to the Kansas City Missouri River Navigation Company, towing the barge *Endeavor*, the biggest of the all-steel barges belonging to that line, carrying the largest shipment of freight ever brought into Kansas City *Navigation on the Missouri* by boat and the most valuable cargo ever brought up the Missouri by a single steamer. The *Endeavor* had on board 70 carloads of freight valued at \$250,000, and including among other things one car each of horseshoes, baking soda, rope, chocolate and bolts, two cars of pianos, one-half car of saws, and many cars of dry goods and general merchandise. Only a little way behind the *Scott* came two smaller steamers and another barge belonging to the same line, bringing half as much cargo as the *Endeavor* carried, and making a total of 115 cars of merchandise within a few days. If this sort of thing keeps up very long those individuals, in and out of Congress, who have called the appropriation made for the improvement of the Missouri a steal, because the river isn't navigable, can't be made navigable, and would not be navigated if it were,

will find it necessary to make a radical change in their ideas, if those ideas are to conform to the facts.

Announcement has also been made of the arrival in New Orleans of the first barge load of coal from the Warrior coal fields. A company has been formed to carry on this trade and is building fifteen self-propelling steel barges which are to ply between the coal field in Alabama and New Orleans through the Black Warrior, Tombigbee and Mobile Rivers, Mississippi Sound and the Lake Borgne Canal. These are not dreams but facts. We are witnessing the beginning of a revival of navigation upon our inland waterways which will presently make our rivers and canals the channels of a vast water-borne commerce.

The railways of the United States cannot promptly carry all the traffic the country can produce in times of prosperity. The re-establishment of steamboat lines will supply much needed additional transportation facilities, and those who are so shortsighted as to fear an unfavorable effect upon the railways of the country will find themselves happily disappointed. There are many things which can be profitably carried only at a price which is below the actual cost of railway operation, and it has been demonstrated time and again that the improvement of waterways and the establishment of navigation thereon has resulted not only in an increase in the population and prosperity, the commerce and industry of the territory served, but in an actual increase of the profits of the railroads which serve that same territory.

FINANCIAL operations of the New York, New Haven & Hartford Railroad, its ownership of trolley and steamboat lines and its control of allied New England railways, are condemned in unmeasured terms by the Interstate Commerce Commission in the report of its *Commission's* investigation which was recently made public. The *Commission's* conclusions are:

New Haven Railroad That the "outside" financial management has been "wasteful in the extreme," and that, had the New Haven confined itself to actual railroad activities under the same conditions that prevailed in other respects, "it could have paid a dividend of 8 per cent. for the fiscal year 1912 and carried to surplus account \$1,794,000, instead of showing a deficit of \$930,000;"

That the New Haven's agreement with the Boston & Albany is "violative of the spirit of the statute against the restraint of competition and should be cancelled." "In our opinion," says the Commission, "this line should be kept entirely free from New Haven control;"

That the New Haven should divest itself of its trolley lines, not because the present ownership is in violation of law but because such ownership might be used to prevent the building of competing lines in the future;

That the Boston & Maine's merger with the New Haven, if permitted to stand, will result in "an almost exclusive monopoly of transportation facilities by railroad in the greater part of New England;"

That passenger train service, without considering safety of operation, is distinctly better on the New Haven than on any other line entering New York, and that of the Boston & Maine equally as good. Both roads are, however, severely criticized for lack of steel cars;

That the freight service of the Boston & Maine "is much less reliable than that of either the Pennsylvania or the Baltimore & Ohio, while that of the New Haven is slightly inferior to the Pennsylvania but about on a par with the Baltimore & Ohio."

That passenger fares in New England have been more favorable to the local traveling public than in any other portion of the United States.

Judging from the Commission's report, this road has been engaging for some years in a series of reckless expenditures for the purpose of acquiring control of the transportation facilities of New England.

The scope of the transactions which fall under the condemnation of the Commission is to be seen at a glance in the following figures: On June 30, 1903, the total capitalization of the New Haven Company was approximately \$93,000,000, with an operated mileage of 2,040 miles; just nine years later the capitalization, excluding stock premiums, was \$417,000,000, with an increase of the operated mileage of fifty miles. During the nine years the road increased its owned mileage from 438 to 800 miles—the remainder being operated under lease—and this increase in owned mileage had cost the Company approximately \$40,000,000. In the same period it expended about \$96,000,000 for betterments and equipment, making a total of \$136,000,000 devoted to the railroad property proper, leaving about \$204,000,000 which in nine years had been expended in operations outside of its railroad sphere.

In discussing the remedy to be applied to the general railroad situation, Commissioner Prouty says:

WHAT is needed first of all to improve the railroad situation in New England is rest and an opportunity for constructive work. There is much truth in the claim of these carriers that they have been so occupied with investigation and so criticized by the public that no fair opportunity has been given for the operation of the railroad properties. No railroad management can succeed without the support of the public which it serves. It must not be forgotten that the railroad is a public servant in fact as well as in name, and that the service which it renders depends largely upon the treatment which it receives from its master.

The Remedy Suggested

"But upon what terms is peace to be secured? In the past the New Haven Company, which has now become the dominant factor and which is mainly to be considered, has proceeded in open violation of some laws and in disregard of the spirit, if not the letter, of others. This course upon the part of that Company is primarily responsible for this unfortunate agitation. That agitation cannot stop, and ought not to stop, until its cause is removed. Any betterment of railroad conditions in New England must begin with the assurance that the New Haven management will act not only prudently, but, above all, within the letter and spirit of the law."

Since this report, and one still further criticizing the management because of another disastrous wreck, President Mellen has tendered his resignation and it is understood that it will be accepted. This probably presages a reorganization which may bring the management more in accord with the law and the public interest.

S. A. THOMPSON.

IN AND ABOUT WASHINGTON

By E. C. SNYDER



Harris & Ewing

DR. MÜLLER AND SECRETARY BRYAN

NOT since the visit of Prince Henry of Prussia to the United States has there been anything like the pomp and circumstance displayed over the visit of a distinguished foreigner to our shores that was shown Dr. Lauro Müller, Minister for Foreign Affairs of Brazil, who

came to Washington last month to return the visit made to Brazil in 1906 by the then Secretary of State, Senator Elihu Root.

A new Secretary of State, William Jennings Bryan, performed the diplomatic offices of the government, and represented

the President and the people of the United States in the ceremonials attendant upon Dr. Müller's presence here.

Dr. Müller, who is a strikingly fine-looking man, is the premier of the Brazilian cabinet, the leading constructive statesman of that great country, and one of the most forceful and interesting characters in the public life of the world.

A deep and conscientious student of large affairs, Dr. Müller's visit is most timely, with no diplomatic significance whatever, in the broad sense of diplomacy, attached to it, but having behind it the friendliness of one great republic for another.

Standing about five feet seven or eight, his clear European skin reflects the birthright of his European ancestors, for he comes of German parentage. He speaks Portuguese, French and German with equal fluency, but has only a slight knowledge of English.

There is a certain reserve about this distinguished Brazilian which the unthinking might regard as a form of hauteur. But his quietness is undoubtedly traceable to his German blood and its influence on his Latin education.

After a tour which reached clear across the country to the Pacific Coast, Dr. Müller and his party boarded the *Minas Geraes* for the return to Brazil. Before leaving he declared that he had been profoundly impressed with the greatness of the United States and greatly gratified by the cordiality of his reception.

In addition to Dr. Müller, there are a number of representative men of Brazil in the party, many of whom have never seen the United States before; and yet, they know more of our country, practically, than we, of the United States, know of the great republic to the south of us. The visit, therefore, cannot fail to be productive of much good, for the men of Brazil will be impressed with our earnestness and the greatness of this country, while, on the other hand, in visiting our cities, they will create an excellent impression of that country, of which the people here know but little.

Dr. Müller and his party were brought to the United States on the *Minas Geraes*, of the Brazilian navy, one of the greatest battleships afloat.

Dr. Lauro Müller, in addition to being

Secretary of State for Foreign Affairs, is a member of the Brazilian Academy of Letters (40 members), and a member of the Historical and Geographical Institute of Rio de Janeiro. He is, also, a member of the Engineers' Club and other scientific and technical associations, among which is the Societe d'Histoire Diplomatique de Paris. He is still a Colonel of the Engineers Corps, having been promoted continually for good service.

Cordial and engaging in his quiet way, Dr. Müller nevertheless warms up immeasurably as he becomes interested, and he radiates the interest he feels in the thing at hand. He shows in everything he does the keen analyst and the constructive trend of his active, alert mind.



ON a knoll in the southern division of Arlington Cemetery, near old Fort McPherson of Civil War days, and not far from the mausoleum erected by Gen. Nelson A. Miles to contain his remains and the remains of others of the distinguished soldier's family whenever the Grim Messenger wills stands a memorial to Major Archibald W. Butt, of the United States Army, in the form of an Irish, or Celtic, cross, twelve feet in



Harris & Ewing

MAJOR ARCHIBALD BUTT

height, and bearing on the face of the pedestal two bronze tablets with the following legends:

TO THE MEMORY
OF
ARCHIBALD WILLINGHAM BUTT
MAJOR U. S. ARMY
MILITARY AIDE TO THE PRESIDENT
1908 TO 1912

SON OF JOSHUA WILLINGHAM AND PAMELA ROBERTSON BUTT, BORN SEPTEMBER 26, 1865, IN AUGUSTA, GA. LOST AT SEA APRIL 15, 1912, WHEN THE STEAMSHIP TITANIC WITH 1500 SOULS ABOARD SANK IN THE ATLANTIC OCEAN.

GREATER LOVE HATH NO MAN THAN THIS THAT A MAN LAY DOWN HIS LIFE FOR HIS FRIENDS. JOHN, XV: 13.

A DEVOTED SON AND BROTHER, AN EFFICIENT OFFICER, A LOYAL FRIEND WHO IN DEATH, AS IN LIFE, SERVED FAITHFULLY GOD AND HUMANITY.

THIS STONE IS ERECTED BY HIS BROTHERS TO MARK AS SACRED THE SPOT HE HAD CHOSEN AS HIS FINAL RESTING PLACE.

Major Archibald W. Butt, military aide to Presidents Roosevelt and Taft, will live not only in the history of the service, but in the great heart of the nation, for generations. His heroic death, when the steamship *Titanic* sank in the Atlantic Ocean on April 15, 1912, has become an inspiration, not only to those who wear the uniform, but to his countrymen as well.

In the full flush of manhood, with every expectation of increasing honors as the years wore on, "Archie" Butt, with sublime courage, the fine instincts of a soldier and a humane man, endeavoring with all his force to get the women and children on the *Titanic* into life-boats as the vessel slowly sank by reason of a collision with an iceberg, met his Captain "face to face," as he crossed "o'er the bar."

A bridge now being constructed at Augusta, Ga., Major Butt's native city, has been named in his honor, and shortly will be dedicated with appropriate ceremonies. Preparations are being made for the erection in the grounds south of the White House of a monumental fountain in memory of Major Butt and his intimate friend, Frank D. Millet, of the Commission of Fine Arts, painter, journalist and globe-trotter, who also lost his life in the *Titanic* disaster.

That fountain, which will be one of the finest in the country, will be a testimonial to the friends of Major Butt and Mr. Millet, including former President William Howard Taft.

A MIGHTY, almost revolutionary, thought is at work in the Department of Agriculture, brought into it by no less a person than the new Secretary of Agriculture, David F. Houston.

In fact there are two big thoughts, or propositions, interesting the department at this time, and should they be worked out successfully—and there is absolutely no reason why they should not be—the circles of activity, of happiness and prosperity, of modernity—in other words, a larger understanding and a better appreciation of the needs of the farmers of the country—will be assured.

And the loneliness of the farm, with its drudgery and its nerve-racking demands, will pass away, while in their place will

come a larger happiness and a more satisfied contentment than has marked the work of the farmer up to this time.

Financed by the General Education Board of New York City, Mr. Secretary Houston has created in the Department of Agriculture a bureau that has for its object the study of rural credits, to the end that the farmer may not only market his products to the best possible advantage, but that he may, by scientific means, increase the productivity of the soil. In other words, this bureau, which is now in its infancy in the Department of Agriculture, gives promise of becoming one of the great adjuncts to a department whose activities have been the wonder and the pride of the American people.

It is the purpose of this bureau to ascertain in the most direct way what forms of activity have proved the most efficient, not only in the United States but in Europe. It will ascertain the principles underlying those organizations, and the reasons why certain ones have failed, and then, by demonstration, they hope to encourage communities to adopt the kind that has proved most eminently practical.

In a broader sense, the task that is before this new bureau of the Department of Agriculture is rural organization service. And for the head of the rural organization service Secretary Houston has selected a man who is undoubtedly the leading rural economist of America—Dr. Thomas Nixon Carver, professor of political economy at Harvard University.

Dr. Carver is a big man physically as well as mentally, and with a capacity for work that will kill off some of his associates if he keeps a-going the way he has gone since he came to Washington to start this bureau along right lines.

While an indefatigable worker, Dr. Carver does not hesitate to take an hour or two in a week for his favorite game of golf, which, by the way, has more devotees in the Wilson administration than in any of its predecessors. While he has a keen sense of humor and is a splendid storyteller, Dr. Carver has not been able to indulge his bent to any considerable degree since he came to the National Capital, for the demands of the position have been of such a character as to keep him at the "grind" many hours each day.

As collaborator with Dr. Carver is C. W.



Photo Clinedinst

DR. THOMAS N. CARVER

Thompson, former director of research in agricultural economics in the University of Minnesota. Among the recent things that Dr. Thompson has written are, "Studies in Egg Marketing" and "A Social and Economic Survey of a Rural Township in Southern Minnesota."

MRS. Woodrow Wilson is a different type of woman from any who have presided over the White House for some years. While they have, for many administrations, if not all, since the time of the Father of His Country, been womanly women of the kind to pattern after, none of them has taken such an active interest in philanthropic affairs during her regime as has Mrs. Wilson in the past few weeks. Her especial interest has been in the effort to eliminate undesirable alleys in Washington. This work is not "slumming," the philanthropic fad of the younger women of to-day, for Washington has few slums. It is the work of the women of the Welfare Department of the Civic Federation, to



Photo Bachrach

A LATE PICTURE OF MRS. WILSON, TAKEN SHORTLY BEFORE SHE LEFT FOR THE NEW HAMPSHIRE HILLS

make Washington the most sanitary, beautiful and decent city of the country. With the aid of Congress they hope and expect to turn all the alleys which are now

filled with dirty, half-tumbled-down huts—many of them built thickly in the form of a "court" and inhabited by negroes—into playgrounds, or open passageways from street to street.

To this end, Mrs. Wilson has made many trips of inspection through these alleys, accompanied by Representatives or Senators and the women leaders in the Welfare Department, and has attended the meetings of the committees regularly.

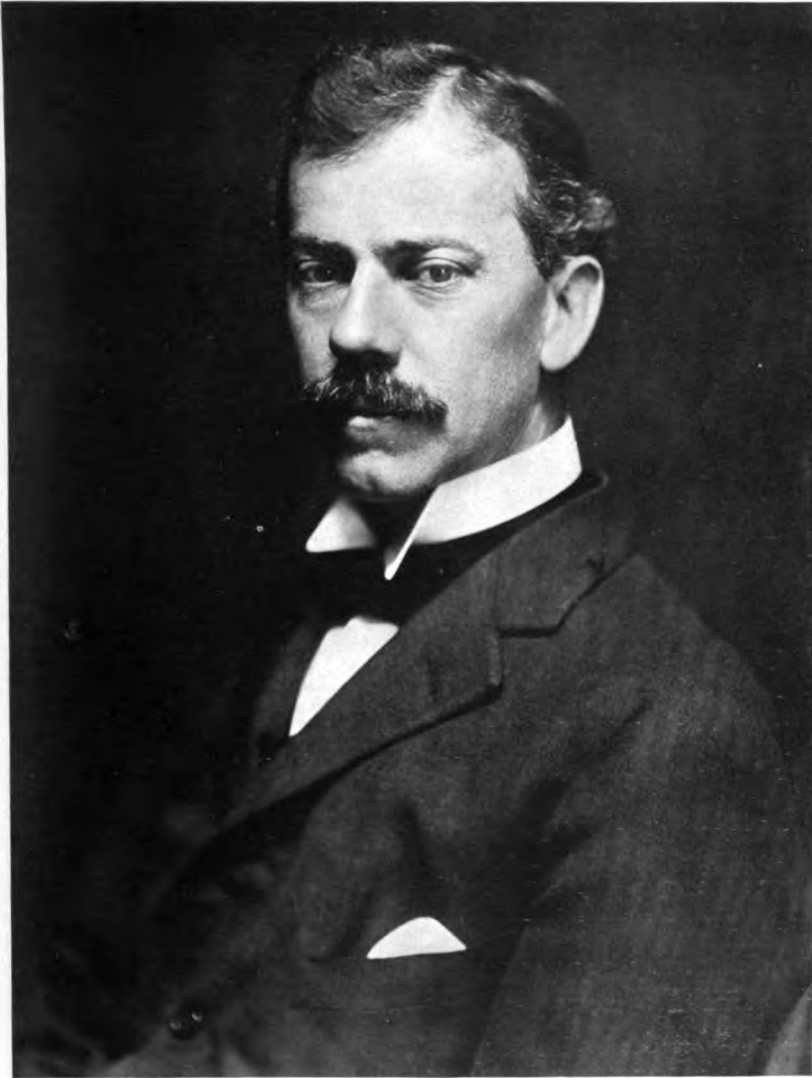
Mrs. Archibald Hopkins has been Mrs. Wilson's frequent companion on these trips, as has been Mrs. Arthur Jeffry, in the homes of both of whom most of the work has been mapped out and reported upon. Mrs. Ernest Bicknell accompanied her on her last trip, and with them was Representative Fitzgerald, the Chairman of the House Appropriations Committee.

Mrs. Wilson remained in the White House as late as it was desirable for her and her daughters to stay in a climate to which they were unaccustomed. They left late in June for Cornish, N. H., to occupy the Winston Churchill place until next autumn, having enjoyed the spring in the White House to the fullest, with their garden parties, tennis games, al fresco tea parties and other festivities suitable for hot weather.

The portico of the White House, which overlooks the gardens, fountain, the Mall, Washington Monument and the Potomac River, as well as the Virginia shore of the Potomac, is an ideal spot for tea. It is comfortably fitted with cool furniture, awnings, screens and hammocks, and is enticing on the hottest afternoon of a Washington summer. Mrs. Wilson was photographed here just before she left for her summer outing.

WITHIN the past month the Lincoln Memorial Commission met in the City of Washington and approved the detail plans of the architect, Henry Bacon, certifying the same to the Secretary of War, who has officially promulgated them.

The meeting of the Commission brought back to Washington an ex-President of the United States, William Howard Taft, and presented in a more authoritative way the architect whose plans for this great memorial to the illustrious dead were formally accepted.



HENRY BACON
ARCHITECT OF THE LINCOLN MEMORIAL

This wonderful memorial is to take the shape of a rectangular Doric structure, which Mr. Bacon conceived as the ideal embodiment of a great national purpose. The purpose, as he has correctly read it, is to express our reverent gratitude to Lincoln in the simplest terms.

A noble memory could not be more fittingly enshrined than in a massive temple raised in white majesty in a still and quiet place overlooking the Potomac River and near the White House, the home of hallowed memories.

Mr. Bacon's masterpiece, as the Lincoln Memorial may be justly designated, has been evolved by a true principle of growth out of an inborn gift and a curiously disciplined experience that long ago won him high rank in his profession. This discipline has not been that imposed by external influences, but has sprung from the nature of his genius.

The memorial designed by Mr. Bacon is Greek in style, but there is nothing academic or factitious about it. In reality, it will fit quite artlessly into its surround-

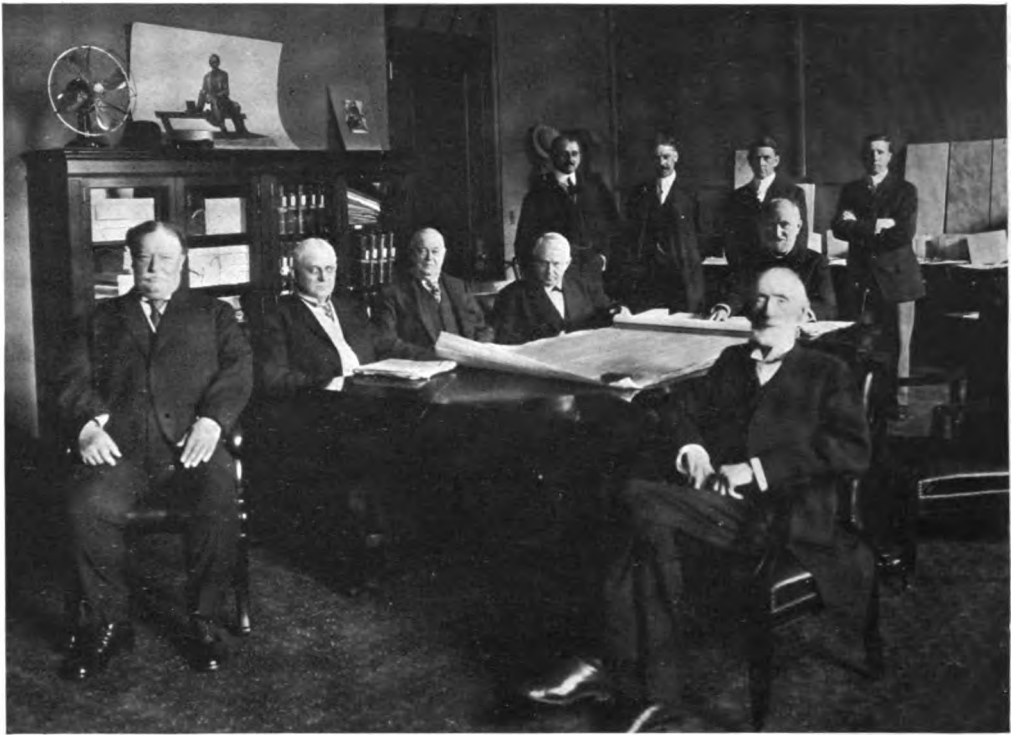


Photo Clinedinst

THE LINCOLN MEMORIAL COMMISSION—WM. HOWARD TAFT, CHAIRMAN

ings, gleaming down there on the bank of the Potomac with that quality of inevitability about it that goes with the work of true creative art, no matter under what sky it is placed.

Bacon is of that rare type among artists of classical predilections, a man who does not merely admire the Greek spirit, but is so thoroughly imbued with it as to really think and express himself in the way of a classicist.

Nor has this been with him only a matter of outward aspect, of those elements in style which are revealed to the layman in the mere outline and decorations of a building. His idea of architecture is essentially one of structure. Plan means to him as much as facade.

Thus, the beautiful building that he is to erect at Washington is an organic work of art, with a perfectly clear reason for being, for it is in devotional mood that we must approach Lincoln. Hence, Mr. Bacon would have us approach him in a place of seclusion, where a heroic image of the great President may be set up in an

almost religious quietude. There will be nothing in this sublime temple to distract attention from the statue it is to guard.

But, while the structure revives the presence of the man, two tablets will recall his still living words—the second inaugural and the Gettysburg address. So it is that a memorial to Lincoln could not be more faithfully, one might say humanly, framed than in this wise. Also, it could not be enriched with the beauty of architecture more appropriately than in Mr. Bacon's austere design.

It is true, indeed, in scanning the works of Henry Bacon that wherever you find the product of his genius, whether it be a bank building, a public library, a railway station, a hospital or a private house that he has designed, you find there an edifice adapted to its uses and enveloped in a delicate and even severe charm.

And it is a great thing to realize that in the memorial at Washington we shall have an *edifice worthy of Lincoln*, and one, as well, that will be a landmark in the history of American architecture.

FRANCE SWEEPS THE SWEEPSTAKES

By HARRY A. TARANTOUS

NATIONAL WATERWAYS' Representative in Speedway Pit



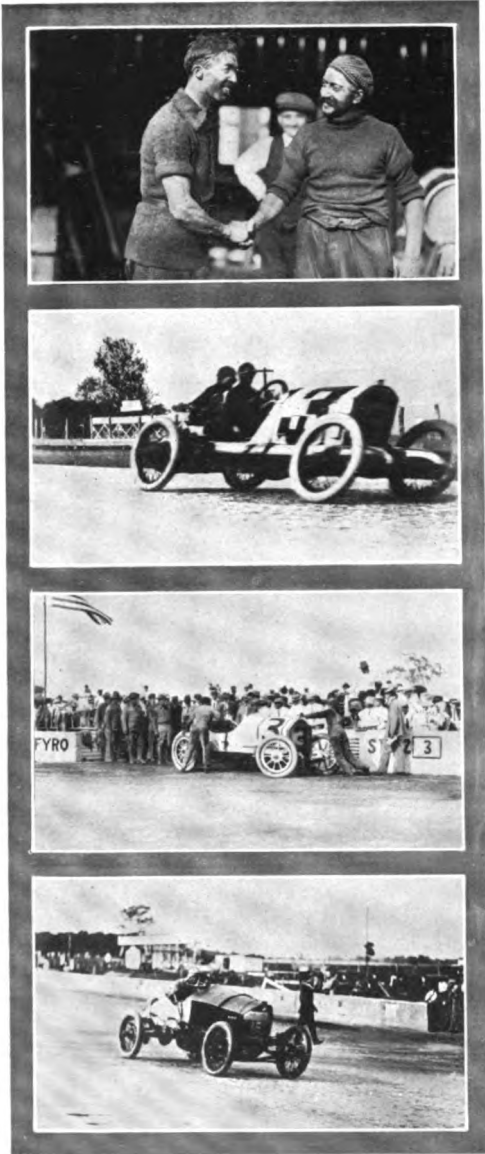
THE FASTEST THING ON WHEELS

M. GOUX, THE ECCENTRIC FRENCHMAN, DRIVING A FRENCH PEUGEOT, IN WHICH HE HAS ATTAINED THE TERRIFIC SPEED OF 107 MILES PER HOUR

EACH year Memorial Day sees the swiftest motor cars in America on the Indianapolis Motor Speedway, ready to battle for a cash prize of \$20,000 for first and innumerable other prizes, but this year's race was a terrible struggle on the part of America to keep foreign cars from returning to Europe with all the money and honor. America was not successful, for the race was won by a Frenchman, Goux. Displaying all the nerve and daring of his race, the driver in a French built Peugeot seemed to be on a grand joy ride as compared with the strenuous effort the other contestants were making to keep up with the leaders.

Goux seemed to be enjoying the race as well as the average city girl gloats over a joy ride in a taxi and seemed so confident of winning the race that he joked with his mechanic and performed such stunts as driving with one hand and with his eyes shut. He brought out his eccentric nature when he stopped at the pit and said in

French: "I'll drive no more 'til I get some wine." And the pit went wild, for they had no wine. They told him to continue and they would bring wine soon. He did for a few laps and it was noticeable that he thought more of the wine than he did of the race, for he looked at the pit every time he came around to see if they had brought the wine. When it came finally the manager would not notify Goux, but when he stopped and demanded wine, nothing was left but to give him a bottle. His mechanic, too, partook freely. Perhaps this is one reason why Goux was talking so loudly and so much. It may be that he was having a race with the motor to see which could consume the most fuel. In any event Goux won, and squarely, too, for he drove regardless of the others, knowing that his car could travel faster than any other car in the world. Not very many months ago the same car and driver made 107 miles in an hour on the Brooklands track in England. This is the fastest



AMONG THE SPEED KINGS

1. M. GOUX, THE WINNER, SHAKING HANDS WITH HIS MECHANIC. GOUX SEEMED DURING THE ENTIRE 500-MILE RACE TO BE ON A JOY RIDE RATHER THAN CONTESTING FOR AN INTERNATIONAL TROPHY OF \$20,000. HE STOPPED AT THE PIT, CALLED FOR WINE AND THE ONLY RACE HE SEEMED CONCERNED IN WAS WHICH COULD CONSUME THE MORE FUEL, HE OR HIS ENGINE.

2-3. STUTZ CAR, ANDERSON DRIVING, MAKING 88 MILES PER HOUR IN THE BACK STRETCH. THIS AMERICAN CAR WAS HAILED AS A WINNER, BUT A BROKEN CAMSHAFT PUT IT OUT OF COMMISSION. IT HELD THE SECOND PLACE UP TO THE 405TH MILE AND BID FAIR TO PASS THE LEADER, BUT AMERICA'S HOPES OF EVEN A SHOWING WERE LOST WHEN THE STUTZ WAS PUSHED FROM THE TRACK.

4. THE KNIGHT ENGINE ENTHUSIASTS WERE VINDICATED BY THE MERCEDES-KNIGHT, WHICH FINISHED IN THE FIFTH PLACE, DEMONSTRATING THAT THE "SEAVE" MOTOR CAN STAND THE STRAIN AND GO THE DISTANCE.

time ever made on any track in any country and Goux was confident that if his car was capable of going 107 miles in an hour, surely it would average over 78 for 500 miles. However, since he was not pushed to any extent the average time was but 74.8 miles per hour.

Besides winning the first prize set up by the Speedway managers—\$20,000—the Peugeot won all the trophies for intermediate distances. Goux was leading at 200 miles, which entitled him to the Remy brassard and trophy offered by the Remy Electric Co. At 300 miles Goux was leading still, thus winning the Prestolite trophy which is offered each year by the Prestolite Company of America. At 400 miles the sturdy Frenchman was well in the lead and two laps, or five miles before the 400th mile, the pit notified Goux that he had little to go for the Wheeler-Schebler trophy. This also was won. And at 500 miles the invader was heralded the winner.

This year's race was a fight against Europe, so far as America was concerned. It was the first time the foreign manufacturers and sportsmen had entered cars in the yearly classic. Besides the winning Peugeot, another car of similar make, with Zuccarelli as pilot, was entered; also three Italian Isottas, with Grant and Tetzlaff, both Americans, and Trucco, a foreigner, as drivers. One of the prettiest cars lined up this year was the English Sunbeam. This is a six-cylinder car with a peculiar shaped body, which makes it resemble, more or less, a cigar. The Sunbeam was driven by Guyot, a Frenchman.

One of the most remarkable entries was the Mercedes-Knight. This car is equipped with a Knight engine and motorists all are familiar with the fight the Knight engine is making for supremacy. The fact that this Knight-equipped car with Pilette, a Belgian sportsman, as driver, finished the race is proof indeed of its sturdiness. No one would have dreamed that a Knight engine could keep up with the leaders at 80 miles an hour, and finish 500 miles. But Pilette used his brains and not his accelerator pedal.

A poppet-motored Mercedes also was in the line-up. Everyone will remember this car, for in the 1912 race, with De Palma at the wheel, this car had a lead of several laps on the nearest car, a National, with Dawson driving. At a

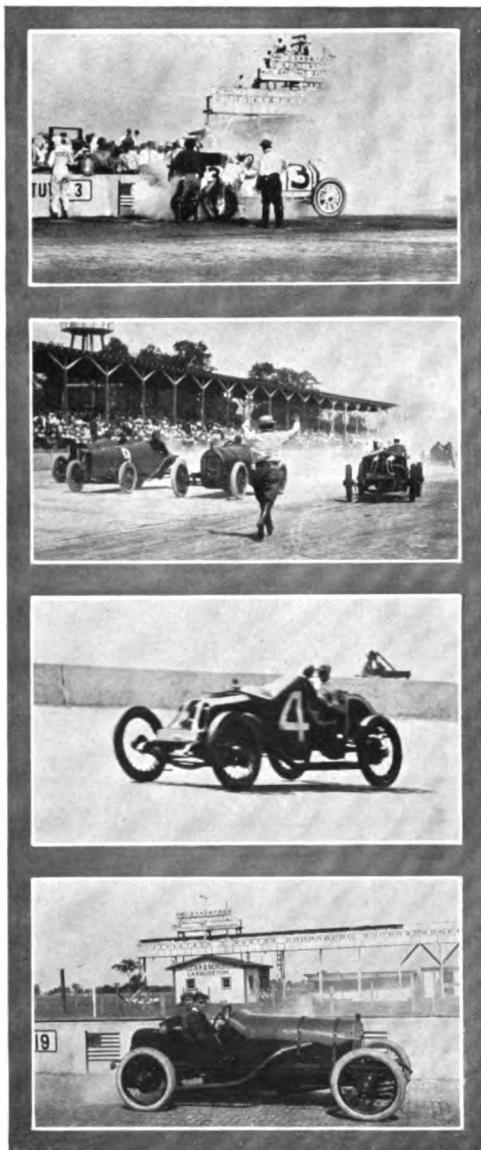
point where everyone would have wagered his last dollar on the German Mercedes, for it had but a few laps to go, the engine broke down. De Palma was almost heart-broken and, believing himself strong enough, started to push the car around the track for the last two laps. This is a distance of 5 miles and proved too much. De Palma and his mechanic fell exhausted on the track. But the very car which failed last year was in the hands of Ralph Mulford this year. Changed only slightly, in mechanical details, the German Mercedes finished the long grind.

But right here comes the most unexpected and inconceivable performance that any car has ever made on any track in the world. Mulford drove the entire 500 miles on a single set of tires. When it is remembered that De Palma and others in practice burned out tire after tire in seven laps, or 15 miles, and when it is added that the Mercedes was the heaviest car in the race, then only is this performance wonderful. Perhaps the most gratifying point and a relief to many heartbroken American enthusiasts is the fact that the tires of the Mercedes are American-made.

It is customary at the 500-mile race to lead the contestants around the track for the first lap. This is done each year by Carl Fisher, the Speedway manager. He set a fast pace and had the cars going over 65 miles an hour when he retired to the field and left America and Europe to begin a battle that will go down in motor car history as a clean victory for France.

Ten seconds after the start every one of the 100,000 spectators knew something. They knew that there would be much tire trouble, for the heat absorbed by the brick track was so intense that the odor of burning rubber of the tires was sickening. And the cars had been under way but a few minutes when the Mercedes-Knight made a tire change. The twenty-seven cars entered used a total of 91 tires, the approximate cost being \$4,000. This is exceedingly low if previous races of this sort are brought to mind. In some of these a single car is known to have used \$1,000 worth of cushions.

Who would think of paying \$10,000 for a gallon of gasoline or \$20,000 for a gear? Just such prices would have been paid by Mulford and Anderson in order to be able



AMONG THE SPEED KINGS

1. MAKING A TIRE CHANGE IN THIRTY SECONDS. THOUSANDS OF DOLLARS WORTH OF TIRES WERE MELTED, BUT ONE SET OF AMERICAN-MADE TIRES FINISHED THE ENTIRE DISTANCE.

2. STARTING THE RACE. THE CARS ARE PACED FOR THE FIRST LAP AT THE RATE OF 65 MILES AN HOUR.

3. BOB BURMAN WAS UNABLE TO START UNTIL THE OTHER ENTRIES WERE ALMOST A LAP AHEAD, BUT HE JUMPED INTO THE RACE AND ATTAINED WITH HIS KEERTON A SPEED OF 85 MILES, ONLY TO SUFFER ANOTHER MISHAP THAT RETIRED HIM FROM THE RACE.

4. SPENCER WISHART LANDS SECOND PLACE WITH AN AMERICAN CAR, THE MERCER. ALTHOUGH GOUX IN HIS FRENCH PEUGEOT WON, IN ADDITION TO THE MAIN PRIZE, ALL THE INTERMEDIATE DISTANCES FOR WHICH VARIOUS PRIZES WERE OFFERED, THE OTHER FOREIGN ENTRIES MADE BUT POOR SHOWINGS.

to pursue Goux, the winner. Mulford in a German Mercedes was in second position and driving fast when on the back stretch, one mile and a quarter from his pit, the car stopped suddenly. Not one drop of gasoline was in the tank. Immediately Mulford's mechanic ran across the track, a distance of half a mile, to get some gasoline, but fell exhausted at the pit. Another man carried five gallons of gasoline to Mulford's car, but too late to permit Mulford to get back into second position. Mulford was almost frantic when he had to stand on the track for fifteen minutes until the pit sent gasoline. It meant almost \$1,000 a minute to him, and when he finally poured the valuable fuel into the tank and got under way he found himself in seventh position. His position varied from seventh to tenth, but by extreme nursing he pulled his mount across the tape in seventh place, winning \$1,800 and the glory of having completed 500 miles on one set of tires.

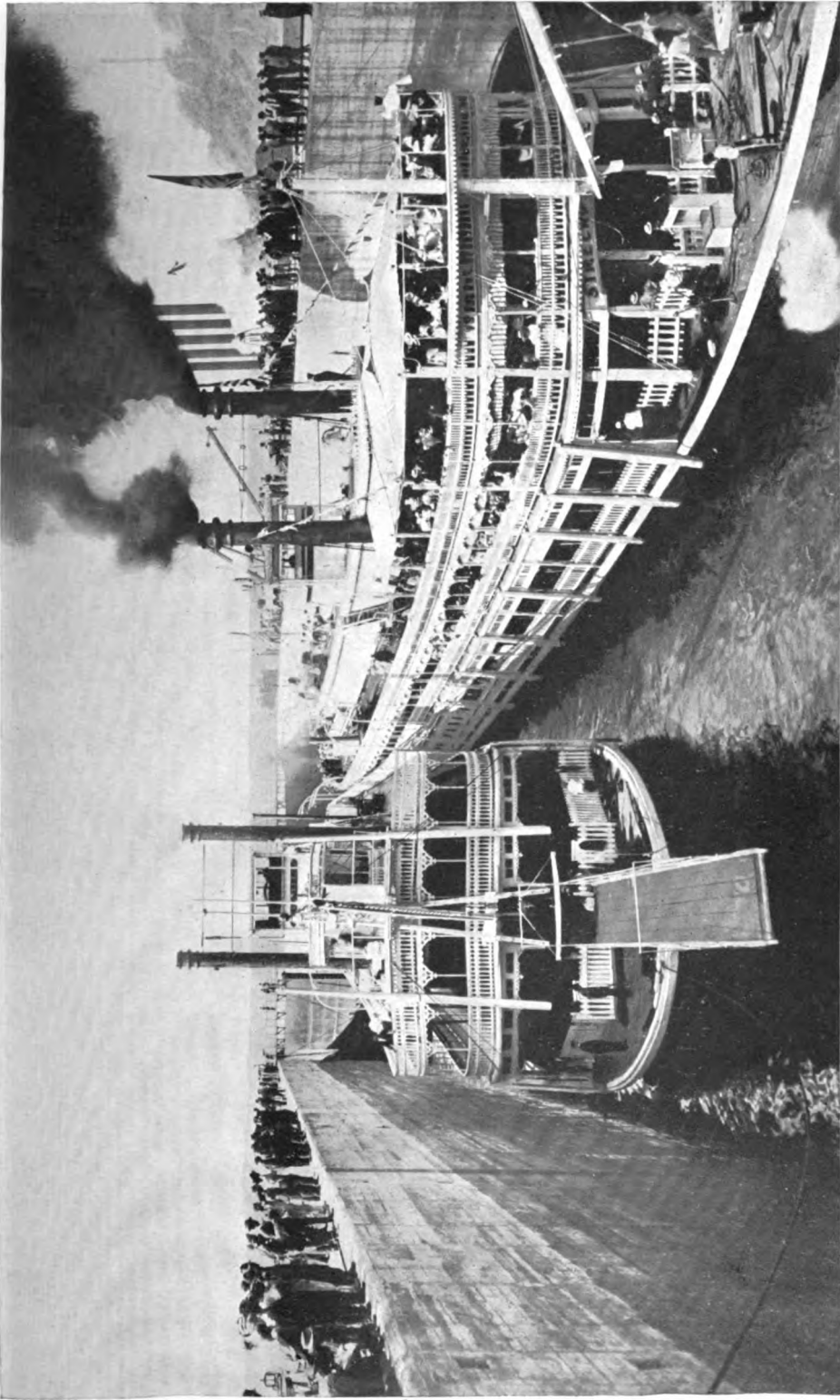
The most exciting part of the race occurred in the last few laps. The crowd was cheering frantically for Merz in the Stutz and Wishart in the Mercer to go faster. The pits notified these men to open the throttle wide and the order was obeyed. It was a fight between the Stutz and Mercer for second place. On the next lap Merz was given a signal to slow down when passing the pit. This he did, but could not understand why he should per-

mit the Mercer to pass him. It was revealed later that the pit wanted him to slow down so that the manager could inspect the tires through field glasses. It would mean he would be out of the race if a tire blew up on the last lap.

The manager of the pit inspected the tires and found them in good condition, and Merz was again given the signal to finish the race with the throttle wide open. His slowing down to permit an inspection of the tires allowed Wishart in a Mercer to pass him and finish second. As Merz passed the tape beginning his last lap the car was enveloped in flames. One lap to go and the car afire! After having lost second place and third place with a prize of \$5,000 but one lap away, Merz and his mechanic were helpless. But a quick thought, "No stop for the fire extinguishers," cried Merz, and, disregarding pit orders, he opened the throttle and drove the last lap with the car afire. He crossed the finish line and a second later the motor stopped. Had he one more lap to go he would have lost a prize and the distinction of being the only Stutz driver to bring a car to the finish post.

One can imagine the nerve it requires to drive a car in such a condition when it is remembered that the gasoline tank on the Stutz is directly behind the driver and mechanic. It was possible for the flame to make its way to the tank, which would mean death to both.

NO.	CAR	DRIVER	COUNTRY
1	Nyberg special	H. Endicott	America
2	Stutz special	Charles Merz	America
3	Stutz special	Anderson	America
4	Keeton special	Burman	America
5	Mason special	Evans	America
6	Mason special	Tower	America
8	Stutz special	Herr	America
9	Sunbeam	Guyot	England
10	Henderson special	Knipper	America
12	Fox special	Wilcox	America
15	Peugeot special	Zuccarelli	France
16	Peugeot special	Goux	France
17	Anel special	R. C. Liesaw	America
18	Schacht special	Jenkins	America
19	Mercer special	Bragg	America
21	Mercer special	Ralph de Palma	America
22	Mercer special	Wishart	America
23	Mercedes-Knight	Pilette	America
25	Tulsa	Clark	America
26	Isotta special	Grant	Italy
27	Isotta special	T. Tetzlaff	Italy
28	Isotta special	Trucco	Italy
29	Mercedes special	Mulford	Germany
31	Case special	Disbrow	America
32	Case special	Nikrent	America
33	Case special	Bill Endicott	America
35	Mason special	Haupt	America



Underwood & Underwood

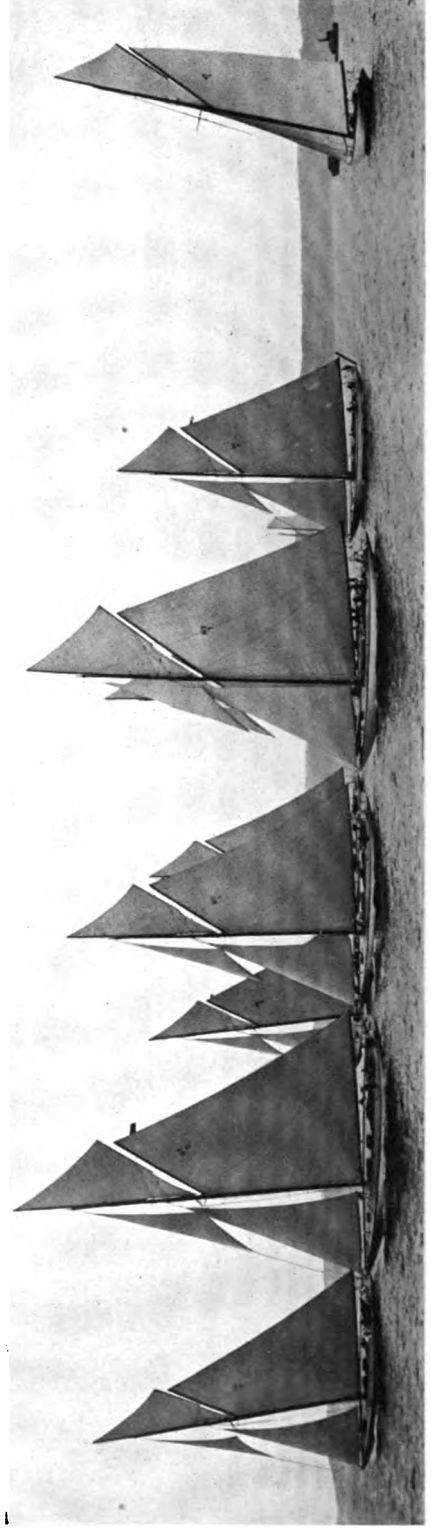
THE FIRST STEAMERS PASS THROUGH THE LOCKS OF THE KEOKUK DAM BESIDES PROVIDING NAVIGATION FOR 65 MILES UP THE RIVER THIS GREAT DAM AT KEOKUK GIVES THE GREATEST WATER POWER NOW USED IN THE WORLD. THERE IS OVER 200,000 HORSE-POWER DEVELOPED, OF WHICH 60,000 GOES TO ST. LOUIS OVER A TRANSMISSION LINE 117 MILES LONG. THE DAM PROPER WITH ABUTMENTS IS 4,610 FEET, EXTENDING FROM KEOKUK, IOWA, TO HAMILTON, ILLINOIS. THE LOCK IS AS WIDE AS THOSE AT PANAMA AND HAS A HIGHER LIFT THAN ANY ON THE ISTHMIUS. THE TOTAL COST OF THE WORK WAS ABOUT \$15,000,000. IT IS A PRIVATE ENTERPRISE OWNED BY A CORPORATION. IT WOULD HAVE COST THE UNITED STATES GOVERNMENT \$5,000,000 TO HAVE MADE THE IMPROVEMENT FOR NAVIGATION ALONE.



Underwood & Underwood

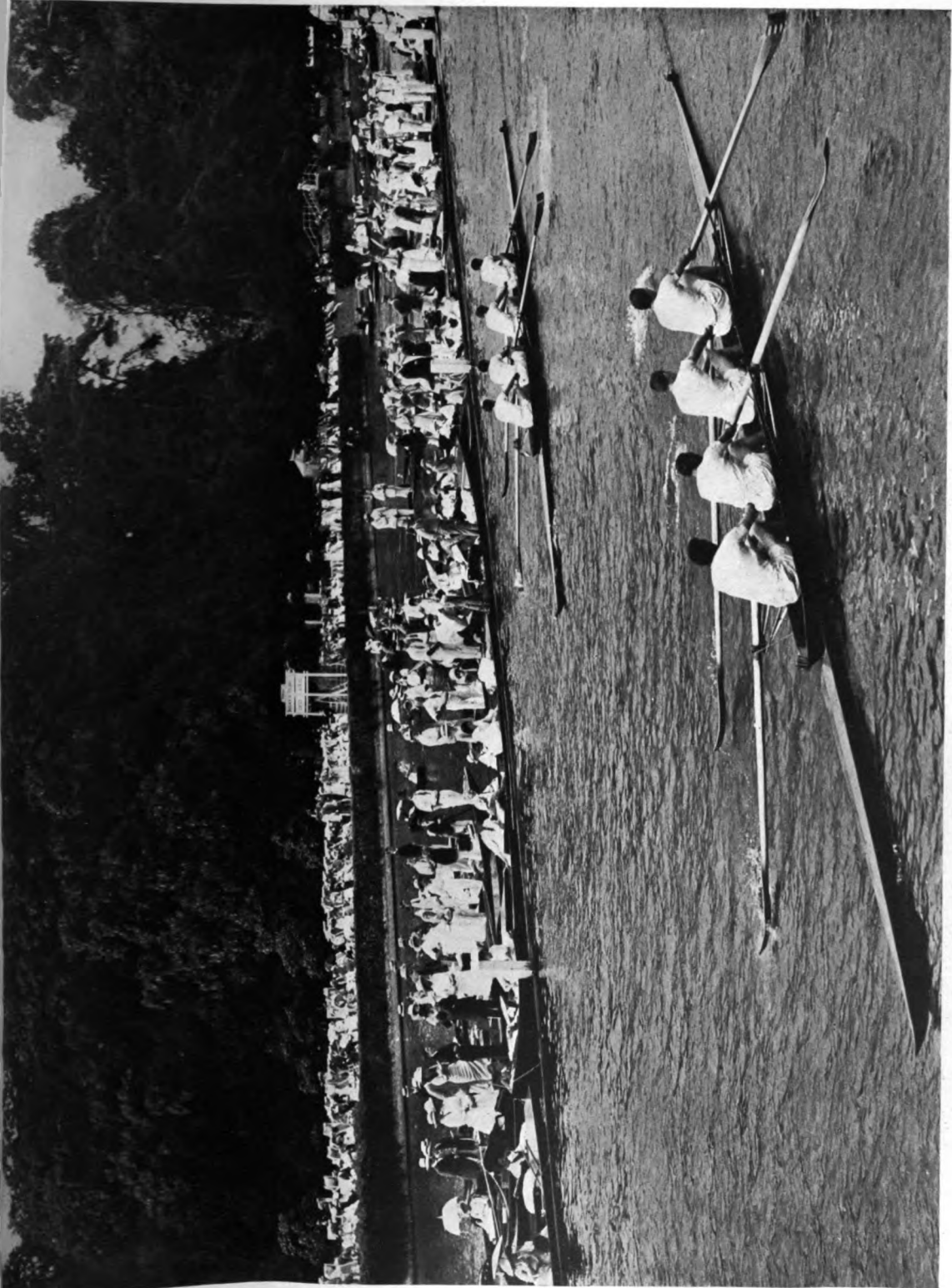
REMAINS FOR THIRTY-SIX HOURS AT THE BOTTOM OF THE SEA

THE SUBMARINE "CAGE," WITH THE INVENTOR, JOHN MILTON CAGE, AND HIS FIVE ASSOCIATES REMAINED FOR TWO NIGHTS AND A DAY AT THE BOTTOM OF THE SEA. THIS BROKE ALL RECORDS FOR SUBMARINE BOAT SUBMERGENCE. DURING THE ENTIRE TIME SHE KEPT IN TELEGRAPHIC COMMUNICATION WITH LAND.



Underwood & Underwood

FLEET OF THE NEW YORK YACHT CLUB, WHICH HAS ACCEPTED SIR THOMAS LIPTON'S CHALLENGE, AND WILL AGAIN DEFEND THE CUP



THE AURIOL RACING SHELL BEATS OUT BY THE ENTIRE SHELL'S LENGTH THE CAINS COLLEGE OF CAMBRIDGE AT THE ANNUAL REGATTA, HENLEY, ENGLAND

COXLESS FOURS SHOW GREAT SPEED



Underwood & Underwood

PERRY'S FLAGSHIP "NIAGARA"

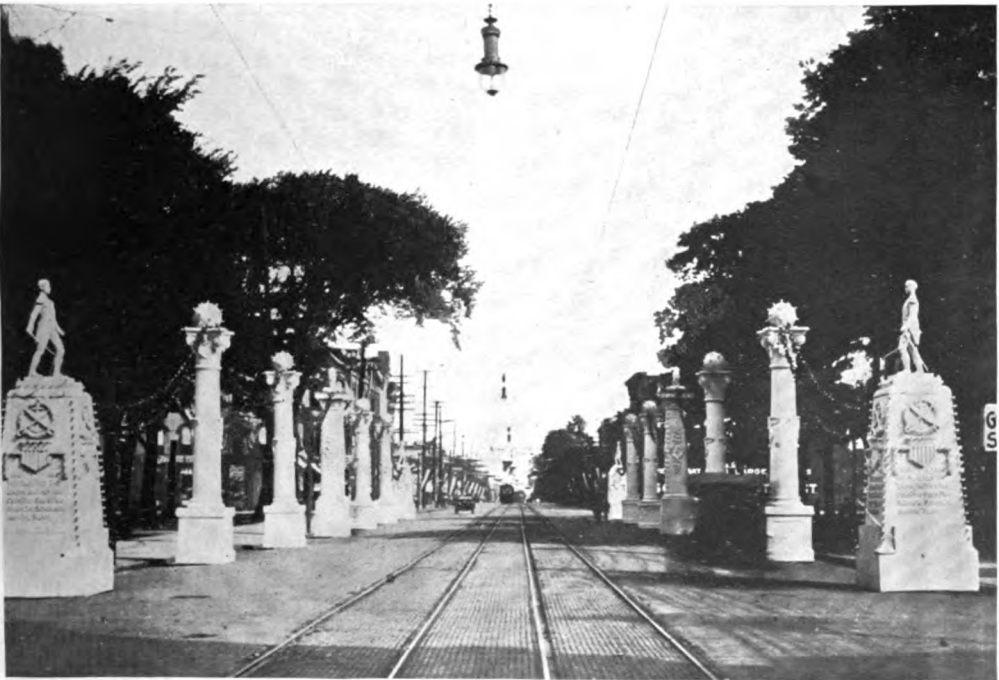
PERRY'S OLD FLAGSHIP, THE "NIAGARA," REBUILT AFTER HAVING BEEN RAISED FROM THE BOTTOM OF LAKE ERIE, WHERE SHE HAD RESTED FOR ALMOST A CENTURY, CAME THROUGH THE STORM WHICH BUFFETED AND THREATENED TO SEND HER TO THE BOTTOM, VICTORIOUSLY, AND WITH THE OLD WATCHWORD OF PERRY, "DON'T GIVE UP THE SHIP," FLYING FROM HER MAIN SPAR, ARRIVED AT FAIRPORT, OHIO, TOWED BY THE UNITED STATES TRAINING SHIPS "WOLVERINE" AND "ESSEX." IN THE MOUTH OF THE GRAND RIVER A BIG RECEPTION WAS HELD AND THOUSANDS INSPECTED THE OLD VESSEL.



Underwood & Underwood

HOW THE POWDER WENT TO LAKE ERIE

THIS OLD POWDER WAGON AND ITS COMPANIONS AGAIN MADE THE TRIP FROM WILMINGTON, DEL., TO ERIE, PA., WHICH THEY MADE ONE HUNDRED YEARS AGO, CARRYING POWDER FOR PERRY'S FLEET.



COURT OF HONOR AT PERRY'S CENTENNIAL CELEBRATION

THOUSANDS OF SHOUTING, HURRAHING AMERICANS PASSED THROUGH THIS COURT AT ERIE, PA., DURING THE BRILLIANT CELEBRATION OF PERRY'S VICTORY ON LAKE ERIE.

THE AMERICAN ELIMINATION RACES

A SERIES OF TRIALS IN ATTEMPT TO PICK A TEAM OF THREE
HYDROPLANES TO REPRESENT AMERICA AT COWES IN AUGUST
AS CHALLENGERS FOR THE HARMSWORTH CUP

By C. F. CHAPMAN

ON Monday, July 7th, a stiff north-west wind stirred up the waters of Huntington Bay, and made the conditions almost impossible for the first of three days' elimination trials to choose the three boats best fitted and suitable to bring back to America the Harmsworth Trophy captured by the English boat, *Maple Leaf IV*, in 1912. However, J. Simpson's *Peter Pan V* was on hand, and made an unofficial circuit of the five nautical mile triangular course in 12 minutes, 10 seconds. No other boats put in an appearance, and in all the first day of the trials proved quite unsatisfactory.

Tuesday dawned fair with no breeze to speak of, and at 2.45 P. M. the five-minute preparatory flag was hoisted from the tug boat, *Dalzel*, chartered by the Motor Boat Club of America for these trials, and at 2.50 P. M. the gun was given, telling the race was on, but only *Peter Pan V* proved quite ready and made a good start. Next a queer looking craft, the *America*, splendid in workmanship, but with the resem-

blance of a sea sled, if such you can imagine, went over the line 1 minute, 10 seconds late, running apparently very smoothly, and throwing a mountain of spray at her stern. Just 12 minutes, 40 seconds late, the *Speed Demon Reliance* passed over the line, equipped with two 250 H. P., 6-cylinder, 2-cycle Pierce-Budd motors, an attractive 40-foot craft, built by the Smith-Ryan Company of Algonac, Michigan, and much heralded as a 65-mile boat; so from her we were all looking for "big things doing."

Gracefully, but thundering and roaring like a seething volcano, the *Reliance* found her way around the course six times, and at the last her engines dropped dead. However, she had done the trick, but that day not up to our expectations. Her average speed was 36.0 nautical miles per hour, or 41.4 statute miles, and her best lap was 37.6 nautical miles, or 43.22 statute miles.

The *Speed Demon Reliance* and *America* are both owned by Commodore J. Stuart Blackton of the Atlantic Yacht Club, one



International News Service

"ANKLE DEEP" AT HUNTINGTON BAY

THIS SPEEDY CRAFT IS EXPECTED TO BE ONE OF THE ENTRIES AT SOUTHAMPTON, ENGLAND, IN AUGUST. SHE ATTAINS TREMENDOUS SPEED BUT UP TO THIS TIME HAS BEEN DISAPPOINTING AS TO RELIABILITY.



International News Service

"SPEED DEMON RELIANCE" AT THE ELIMINATION TRYOUTS

of the most enthusiastic motor boat sportsmen in the United States, and both of these boats were built as challengers for the British International Trophy.

The *America* is an entirely new type of racing craft, the design of Mr. Albert Hickman of Picton, Nova Scotia, and built by the Murray & Tregurtha Company of Boston, and is fitted with surface propellers. She has an inverted V bottom, and the claims of Mr. Hickman are that instead of throwing the spray outward, she draws it in under her bottom and virtually rides on compressed air. The *America* is equally good in rough as smooth water. She is equipped with two 180 H. P., 8-cylinder, 4-cycle Van Blerck motors and her best time proved 33.0 nautical miles per hour, or 38.0 statute miles, but she was able to make only two laps, owing to magneto trouble.

The *Peter Pan V*, tested out last year, is only a 20-foot single step hydroplane with pontoons, or, as more often spoken of, "bustles," attached to her sides at the water line, thus keeping her steadied in the water by the additional breadth. She is designed by George F. Crouch, and owned by James Simpson, "father of the Peter Pan boat family," and is equipped with one 150 H. P., 8-cylinder, 4-cycle Van Blerck engine, propelling her at an average speed of 37.20 nautical miles per hour, or 42.7 statute miles. Owing to a cracked shaft and cylinder she was able to go over the course only four times.

On Wednesday, *Ankle Deep*, who last year, until within the final 2-mile stretch, had the International Race in her grip, but because of a broken shaft lost to the English, put in an appearance as a contestant. *America* was unable to make the run; *Speed Demon* was withdrawn

from the trials, as her engines were not proving satisfactory, and only to satisfy the onlookers, who had come from far and near, *Ankle Deep* and *Peter Pan V* went over the course one lap. The former, driven by her owner, Count Mankowski, proved the faster and better able to stand the rough water, which the southwest gale had kicked up. She is a 32-foot Crane design, and powered with two 150 H. P., 8-cylinder, 4-cycle Sterling motors, her best time being 38.4 knots per hour, or 44.1 statute miles.

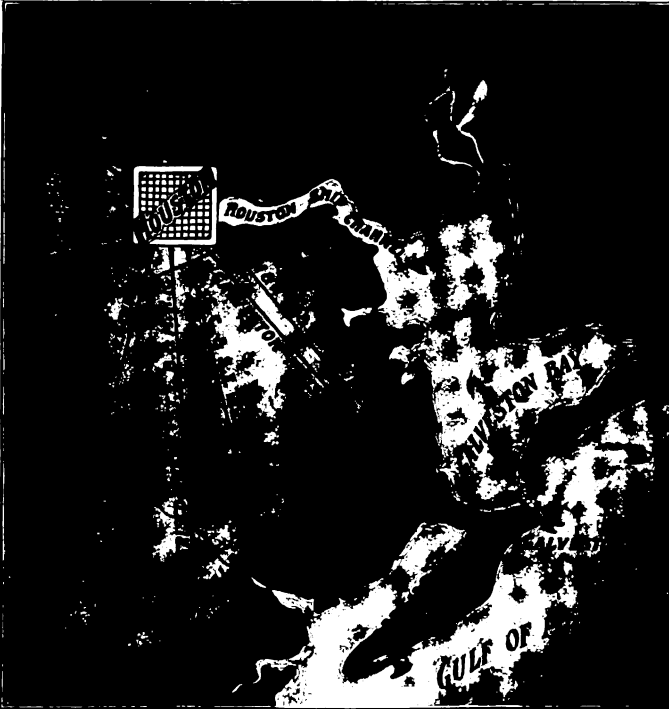
As none of the racers up to date had been able to go the necessary 30 miles without a breakdown, with the exception of the Crane hydroplane, *Ankle Deep*, the committee was unable to pick a team on Wednesday night and ordered another day's racing, hoping that additional entries would appear or that those entered would show a trace of reliability, at least. However, the next day brought no encouragement, for neither *America* nor *Peter Pan V* were able to go more than once around the 5-mile triangle at speed, and both dropped completely out before covering ten miles. *Ankle Deep*, as usual, showed her old-time speed and went twice around without trouble, but dropped out when she had no competitors left.

The *Speed Demon* was able to cover only 45 miles in total run, and this showing was so discouraging to her owner that he immediately withdrew.

With *America* and *Peter Pan V* the main trouble seemed to be broken pistons and cracked cylinders, resulting from a faulty lubrication system. As both of these boats had the same make of motors installed, there is a probability that the fault can be rectified before it is necessary to send the boats abroad the last of July.

HOUSTON

THE MANCHESTER OF AMERICA



MAP SHOWING HOUSTON'S RAILROADS AND SHIP CHANNEL

LOCATED on the famous Ship Channel, the natural arm of the sea the U. S. Government is improving under an appropriation of \$2,500,000.00. Five dredges are securing a minimum depth of 25 feet. It will be open to ships of the world early in 1914 and by provision with the U. S. Government

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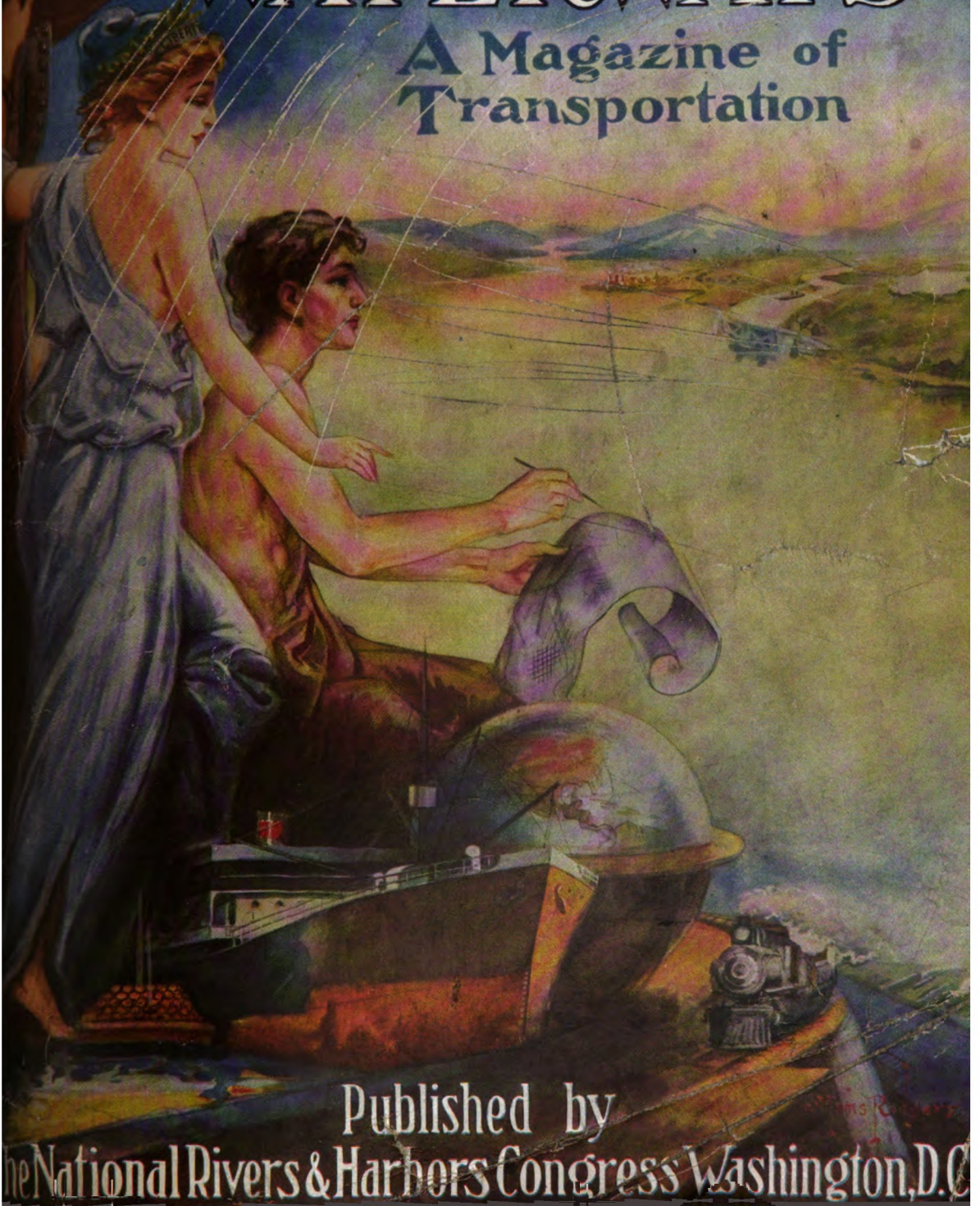
Largest Combined Railroad Center and Deepwater Port in the South. The Port that will Benefit Most Through the Opening of the Panama Canal. Let us Prove Why Houston is Your Best Location.

Chamber of Commerce HOUSTON TEXAS

WHERE SEVENTEEN RAILROADS MEET THE SEA

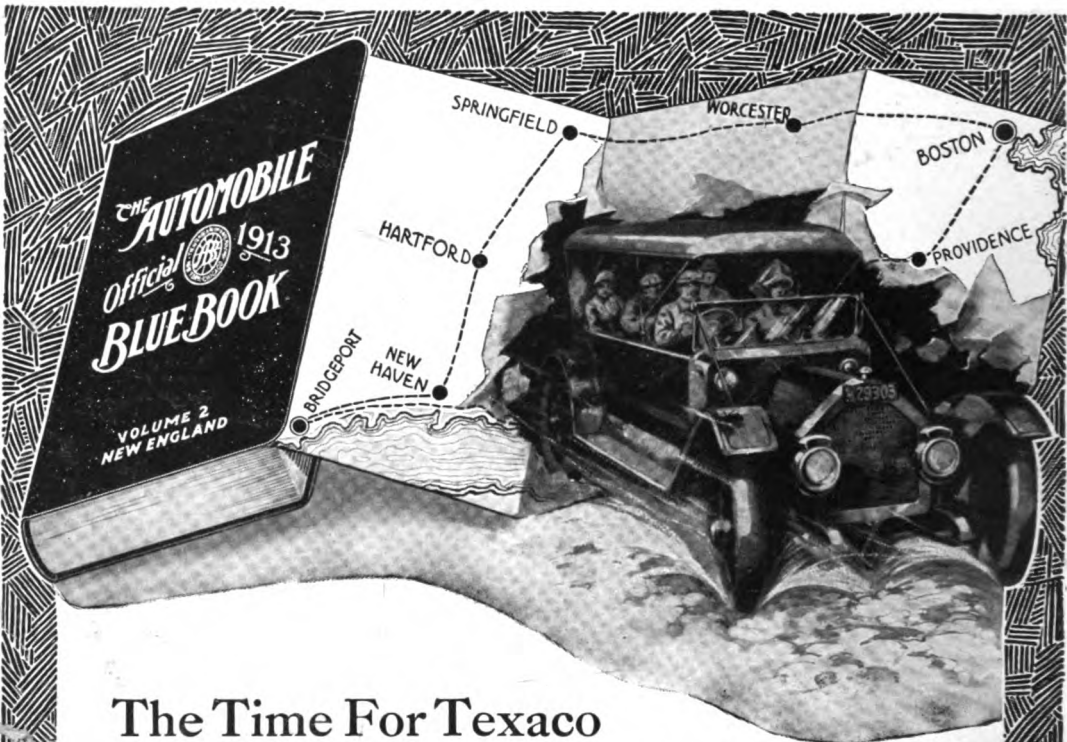
NATIONAL WATERWAYS

A Magazine of
Transportation



Published by

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VOL. 1

No. 6

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*



"MAPLE LEAF IV" WINNING HARMSWORTH TROPHY

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JOS. E. RANSELL, PRESIDENT

S. A. THOMPSON, SEC'Y AND TREAS.

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AMONG OUR ENDORSERS



The value of important waterways and the commerce development of the country cannot be exaggerated, and the necessity that the Federal Government should adopt a definite and fixed policy that will provide for their speedy improvement must be evident to every one who considers the matter at all.

It gives me great pleasure to express my deep interest in all that the National Rivers and Harbors Congress is doing.

Woodrow Wilson



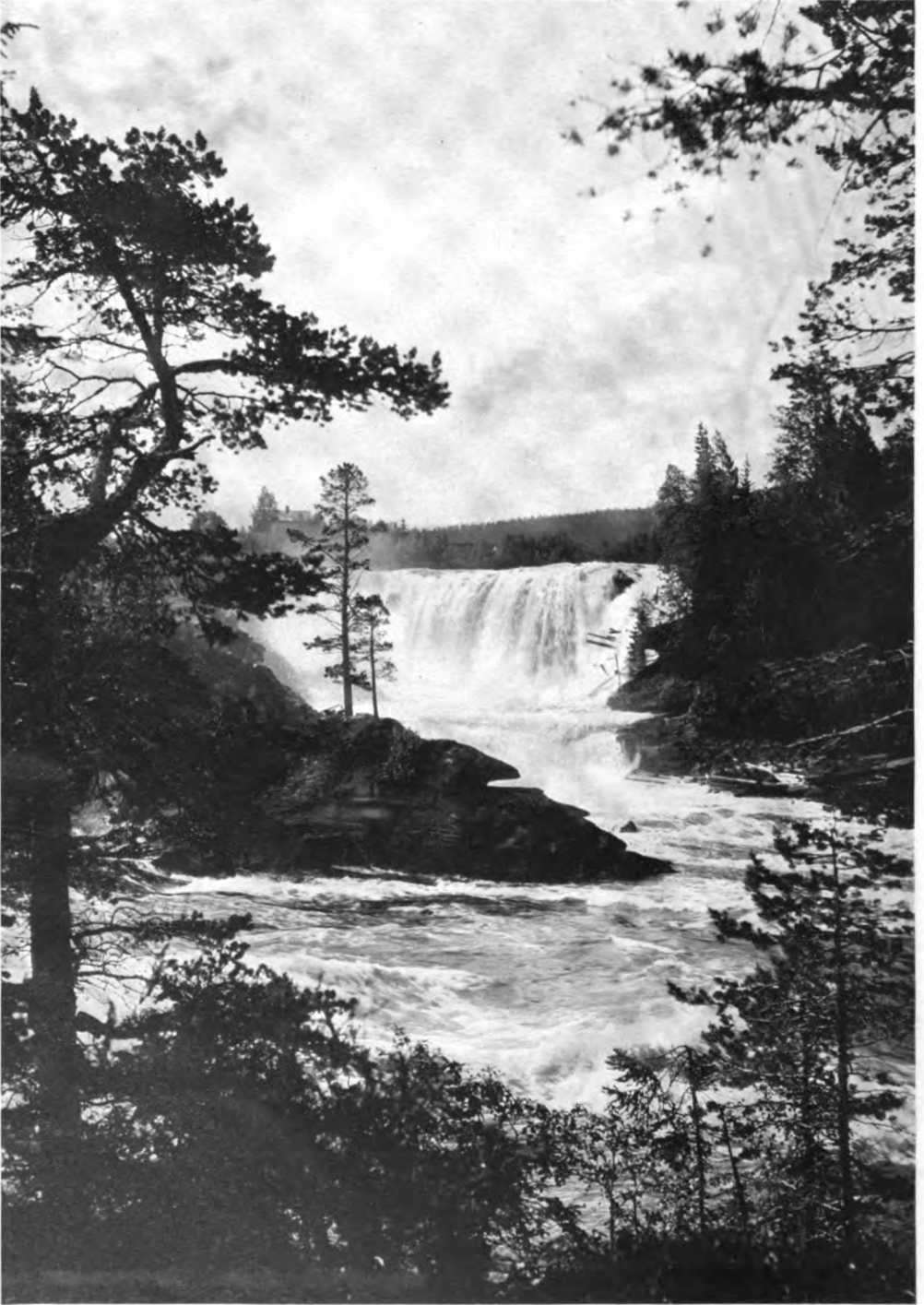
Perhaps the greatest influence toward the framing of a broad, comprehensive, progressive policy of river and harbor improvements is being exercised by the National Rivers and Harbors Congress. Its motto is "A Policy, Not a Project." Through its work the question of waterway improvements has been most prominently and favorably brought before the public, and men of the highest character and influence throughout the country are enlisting in its cause. It urges the appropriation of fifty millions of dollars per annum. Such a policy has my hearty approval.

James A. Fair



A special word is due the National Rivers and Harbors Congress. It is the one organization that is advocating a waterway policy and not a waterway project, and is national in its scope, for it represents practically all the friends of waterway improvement in the United States. The question of river and harbor improvements and the benefit that each will bring to the producer and consumer has, through its work, been favorably and prominently brought to the attention of the country. Prominent commercial organizations and men of character and influence throughout practically every section of the country are enlisted in the cause it represents. Its work being strictly national, and in no sense local or sectional, merits and should receive the support of our citizens.

Theodore Roosevelt



THE FALLS OF RISTAFALLET, JAMTLAND, SWEDEN

NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I

OCTOBER, 1913

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SWEDEN—A LAND OF LAKES

By CHARLES H. GRAVES

*"As one travels by rail through Sweden, he is scarcely ever out of sight of a lake or a river. The line seems to follow along the shores of a lake and then over a short divide into the valley of the next one, and so on all the day. * * * * Large and small, they dot the green earth with blue wherever the eye turns. The peasants call them 'the eyes of the earth,' and limpid and blue they are, like the eyes of the Northern maidens."*

MOUSING among the books in an old bookstore in Stockholm, which is there called an "antikitet," I ran across a few shelves of books in the English language. These were doubtless from the odds and ends of old family libraries that by the vicissitudes of life and time had at last found their way to the auction rooms. Stockholm has numbers of these old book-shops, stocked mostly with books in Swedish but yet containing quite a lot in other tongues and affording good picking for the book-lover or the antiquarian.

One of the books that I found was called "Travels through Sweden and Finland," by one Joseph Acerbi. It is in two quarto volumes, with quite a number of illustrations from excellent sketches and drawings by the author. The travels were in the years 1798 and 1799. Acerbi was an Italian by birth but quite Anglicised, for

he wrote in English and his books were published in London. The title page says: "Printed for Joseph Mawman in the Poultry, successor to Mr. Dilley, 1802." Acerbi was a good artist with the pencil, a student of natural history with much scientific knowledge, and a keen observer. He therefore left a very interesting picture of the country and its people at the time of his travels, much of which is true of them to-day.

Landing at Gothenberg on the west coast, he travelled overland across the kingdom to Stockholm, and thence pursued his way over the Baltic on the ice in a sledge, and in the month of March, to Finland. That fact indicates the change of climate in this country in the century which has intervened since that journey, as no such traveling over the Baltic is now possible at any time. Thence he went up through Finland, across Northern



Ferd. Flodin, Stockholm

COL. CHARLES H. GRAVES
MINISTER FROM THE UNITED STATES TO SWEDEN

Sweden, the Lapp country and Norway, even to the North Cape.

One must read his book at leisure, for it is printed in the old type, with the "f" for the "s," and that is quite confusing in these latter days. But all that quaintness and the deliberateness of his old-fashioned narrative adds to the charm of its perusal. He gives a picture of the character of the land of Sweden in words that may well be quoted here: "There are no public vehicles, such as stage-coach, mail or diligence. * * * * and there is no regular conveyance between the country and its capital."

* * * * "The reason assigned by the Swedes, that there is no need of stage wagons and the like for the transportation of merchandise, as the country is everywhere intersected by lakes and navigable rivers, is not," he says, "an

excuse." And he goes on to tell that very little of the transportation of the country was done upon the roads, but that it was done upon the water, or as was more common, it was made to wait until the winter and then, when the lakes and rivers were frozen over, they were so frequent and numerous as to furnish a good level road for the heavily loaded sledges to and from all localities.

The Scandinavian peninsula is an immense stretch of land running from the Arctic Ocean well above the Arctic Circle to the Baltic. It covers an area of nearly 300,000 square miles. On the east of this peninsula lie the Gulf of Bothnia and the Gulf of Finland; east and south is the Baltic Ocean; and west lie the North Sea and the Atlantic. From these great seas the vapors rise and float in clouds over the land, depositing on the mountain range, that backbone of the penin-

sula which forms the boundary between Sweden and Norway, vast stores of rain, snow and ice. These stores of moisture feed the rivers and lakes and make of both these countries a veritable "Land of Lakes."

Of the 111,000,000 acres forming the surface of Sweden, over 8,500,000 are covered with lakes. Large and small, they dot the green earth with blue wherever the eye turns. The peasants call them the eyes of the earth, and limpid and blue they are, like the eyes of the Northern maidens. Beautiful they are, and useful, too, since they facilitate communication and transportation, by boat in summer and by sledge over the ice in winter, in all the local needs of that nature and also for those of greater distance.

As one travels by railway through Sweden, he is scarcely ever out of sight of

a lake or a river. The line seems to follow along the shores of a lake and then over a short divide into the valley of the next one, and so on all the day. To some extent these water courses have been united by artificial canals and channels, but not to so great an extent as might have been expected. The canals also are of but small depth, with capacity for rather small craft. The greatest of the Swedish lakes are the Venner, Vetter, Hjelm and the Malar. They are little inland seas. The Venner covers an area of 2150 square miles, the Vetter 732 and the Malar 449. These are linked together by that oldest of the Swedish canals, the Gota, and thus is formed a waterway clear across Sweden from Stockholm to Gothenberg.

The canal is quite a remarkable work for the early day at which it was constructed. More than four-fifths of this waterway is made up of the lakes mentioned. The canal part is 46 feet wide at the bottom and 86 feet wide at the water level, with a depth of ten feet and capacity for boats of about 300 tons burthen. The route is a favorite trip for tourists. The sensation of sailing smoothly along through

lovely agricultural scenery, where one can put out his hand and touch the boughs of the trees as the boat passes, the charming walks while the little steamer is moved through the many locks, are all very agreeable, and Americans have here a rare opportunity to enjoy days of leisure and repose with no "hustle" or rush.

The tourists usually go also to Dalecarlia, that charming province of northern central Sweden, and there see the beautiful use of nature's waterways which obtains there. The village church stands near the shore of a lake. From miles around the "Church Boats" make their picturesque voyages each Sunday morning, carrying from ten to forty persons each, a sturdy, happy folk, all wearing the pretty peasant costume of Dalecarlia. And as the great oars move in measured unison with its time, a sweet old chant may be heard across the placid water.

Stockholm, which is famous for its situation among inlets and natural waterways, is a city covering within its limits more than one eighth part of water. The inlets and arms of the harbor intersect the town in all directions. Little steamers ferry



Axel Sjöberg & Co., Karlsborg

TOPPO FALL, TROLLHATTAN

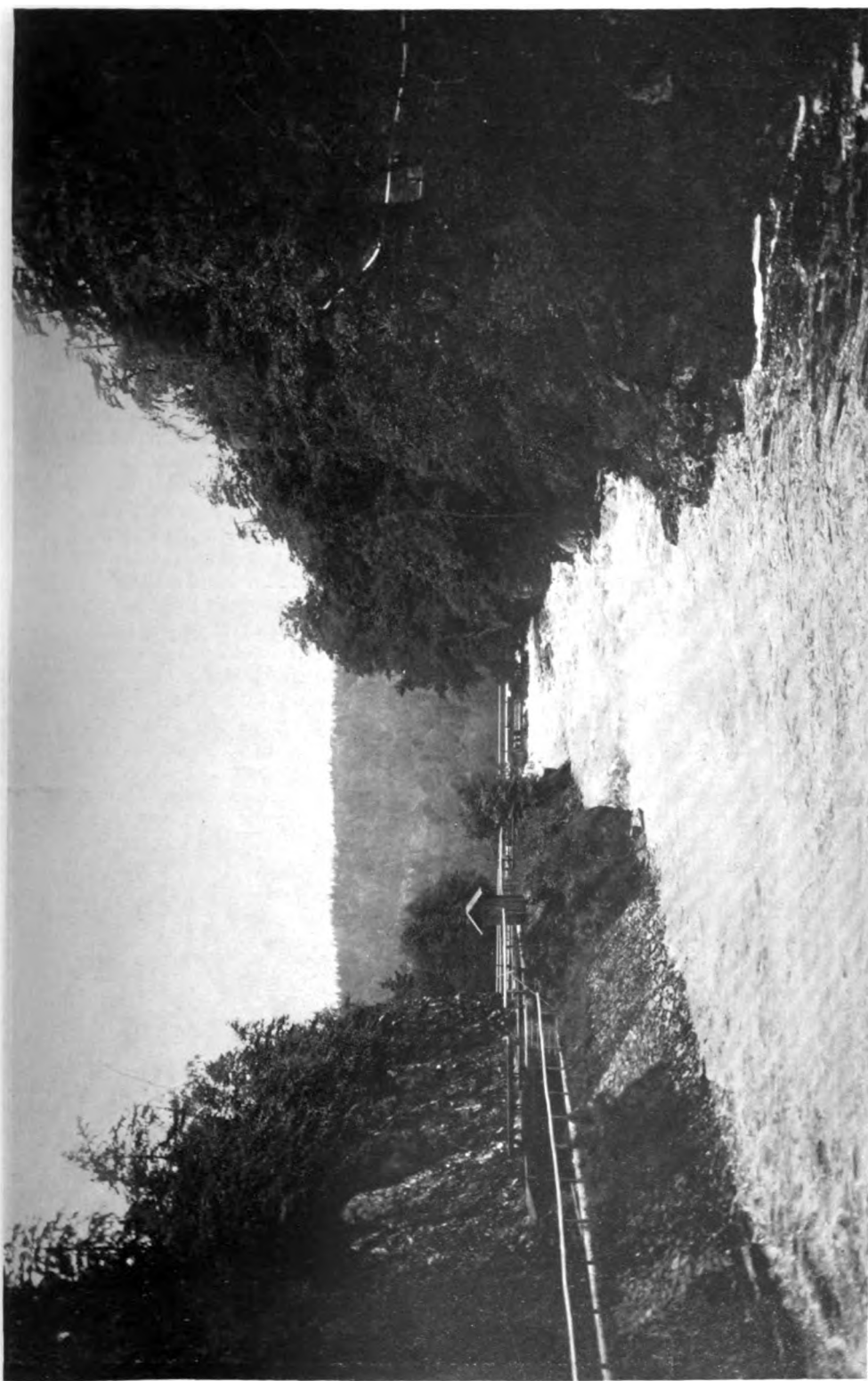
AT TROLLHATTAN THE RIVER GOTA ALF PLUNGES DOWN A TOTAL DEPTH OF 110 FEET IN A SUCCESSION OF FALLS AND RAPIDS LYING IN A DEEP GORGE SOME 1600 YARDS IN LENGTH



Alfred Sjöberg, Karlsborg

THE SENSATION OF SAILING SMOOTHLY ALONG THROUGH LOVELY AGRICULTURAL SCENERY, WHERE ONE CAN PUT OUT HIS HAND AND TOUCH THE BOARDS OF THE DECK AS THE BOAT PASSES.

THE HIGHEST POINT OF THE GOTA CANAL.



Alfred Sjøberg, Karlsborg

THE DALSLAND CANAL AT HOFVERUD

THE DALSLAND WATERWAY HAS A TOTAL LENGTH OF 254 KILOMETERS, OF WHICH ONLY 7.9 ARE ARTIFICIAL. AT HOFVERUD THE CANAL IS CARRIED ACROSS A RIVER IN AN AQUEDUCT OF STEEL

the inhabitants across from one quay to another and larger ones ply to the many summer resorts and villas that dot the shore of the great lake Malar and its arms, to the north of the city, and the shores of the thousand islands which lie east and south out to the Baltic Sea. One may take a hundred different but charming excursions on the graceful, white passenger boats that are such a feature of Stockholm's summer life.

The rivers of Sweden are mostly shallow and rapid. But this characteristic, while not lending aid to navigation, affords many channels for floating the logs from Sweden's great forests and also many natural or easily adapted opportunities for water-powers. Until recently these latter were not much improved, but now the country has awakened to an appreciation of their value and importance and many power works are in process of construction at the various waterfalls. At the same time experiments are going on regarding possible use to be made of these powers through the generation of electric current and its transmission. Remarkable results have been achieved by the always inventive Swedish engineers, results which are partly due to their own inventions and partly to their application and improvement of inventions made in other countries. These include the smelting of iron ore by electricity and the reduction of zinc ores, which have now passed the experi-

mental stage and are today in practical use.

The total hydraulic force of Sweden is estimated to be 10,000,000 horse-power. There is now developed and in use 700,000. A great future seems assured for this country, with its rich endowment of running water courses. When the coal measures of other lands shall begin to show signs of coming exhaustion, this may be the greatest manufacturing land of all.

But one cannot view the waters of Sweden without considering its wonderful coast line. Surrounded, as it is, by seas on all sides but one, it has an unparalleled seaboard of about 2,000 miles. This coast line, too, is a succession of bays, islands and river mouths. Many of the estuaries run back a long distance into the interior. These fastnesses of the Sea Rovers and the Vikings long ago now serve as waterways to many parts of the land.

The coasting steamers come and go from the main ports and cities of Sweden into these estuaries, and thus reach the smaller towns and cities with cargoes in exchange for their diverse productions.

Such numerous waterways and ports have naturally, from the earliest times, made this a nation of navigators. They now list about 3,000 vessels with a tonnage above 1,000,000. Ninety per cent. of these are steam vessels. The freight earned in the year 1911 by the vessels engaged only in foreign commerce was over \$25,000,000. Unfortunately there



Alfred Sjöberg, Karlsborg

A FLIGHT OF LOCKS ON THE GOTA CANAL

are no figures available of the internal freight and earnings, but they must be large. The figures I have given are large for a nation of less than 6,000,000 people.

On a residence in Sweden one is struck by observing the comparatively small tonnage of freight which is handled by the railways of the country, for the heaviest of that tonnage is moved by water. Travelling by railway in the United States, one passes at every sidetrack long trains of tremendous freight cars waiting for the right of way to move on. In Sweden he will seldom see one. They are called here "goods trains." The cars, or "goods wagons," are of ten tons capacity, and but few of them are to be found behind

cost until all the steam and other vessels were driven out of business so that the railway might later monopolize the transportation. Railways seem to be contented with handling the lighter and more valuable classes of freight or that demanding



Nilsson, Solleftea

MID STATELY MOUNTAINS, FOREST CLAD



A WINDING WAY TWIXT HILL AND PLAIN

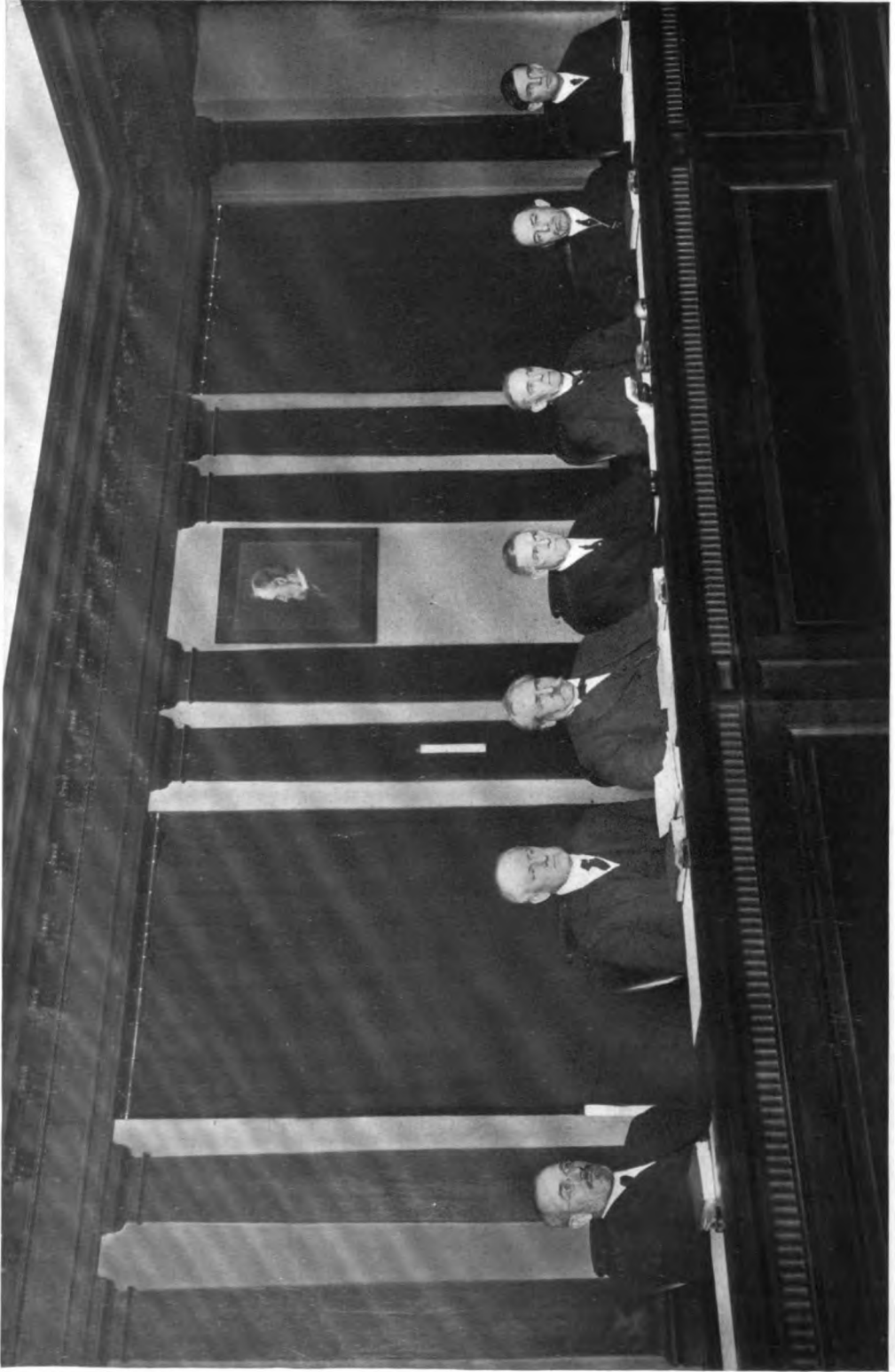
any one locomotive. Their little open-work wheels, with spokes, twinkle in the sunlight as they quietly peg along, and an American might think that they were the toy train of some boy of the neighborhood.

Meanwhile the great freight of the country is being moved by water to the nearest point available to its destination, and only from there on is its carriage assumed by the railway. It has not been the policy here to have the railways temporarily put down the freight rates below

speed of movement, and have left to the boats the carriage of bulky materials. So on all these waters are lines of moderate-sized steamers and barges, carrying quietly and slowly a great tonnage.

Of this freight the great volume is timber and timber products. Sweden is one half forests, which are now being carefully conserved and guarded, and which yield a steady output. The value of her export of timber products is over \$50,000,000 per annum, besides \$9,000,000 worth of wood pulp and \$3,000,000 worth of matches. Next in volume come, of course, the minerals, which are considerable in weight and value, exports in 1910 being \$30,000,000.

In this old country they commenced to build canals in 1523, earlier than almost any other land, and it is interesting to know that their original cost was low because the King put several regiments of soldiers to work in making them.



THE INTERSTATE COMMERCE COMMISSION IN SESSION

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FEW GOVERNMENTAL BODIES ANYWHERE ARE BURDENED WITH DUTIES MORE COMPLEX AND IMPORTANT THAN THOSE ENTRUSTED TO THE INTERSTATE COMMERCE COMMISSION, WHICH IS HERE, FOR THE FIRST TIME, PHOTOGRAPHED IN SESSION. FROM LEFT TO RIGHT THE MEMBERS ARE: BALDASAR, II, MEYER, JAMES S. HARLAN, JUDSON C. CLEMENTS, EDGAR E. CLARK (CHAIRMAN), CHARLES A. BROVY, CHARLES C. MC CHORD AND JOHN H. MARBLE.

PHYSICAL VALUATION OF RAILROADS

By ROBERT M. LAFOLLETTE, U. S. S.

WHEN Senator LaFollette first proposed the physical valuation of railroads he met with nothing but ridicule and derision. But the bill, of which he is the author, has now become a law, and the Interstate Commerce Commission is organizing the force of engineers and experts who are to perform the gigantic task of surveying and appraising nearly 250,000 miles of railway. The result, as Senator LaFollette says, cannot fail to be of enormous value not only to the public but to the railways as well.

FOR more than a quarter of a century it has been the dream and ambition of advanced thinkers along economic lines to bring about a closer relationship between the railroad and the public, to the end that reasonable rates might be fixed through an exact knowledge of the valuation of railroad properties.

Going back to 1870-1872, the movement which swept over this country and brought about the enactment of the law of 1887 was a movement for reasonable rates. That was the primary thing; that was the idea around which public opinion crystallized; that was the dominant thought that brought Congress finally, after fifteen years, to enact the law of 1887. But while, in the enactment of that law of 1887, Congress declared that transportation charges should be just and reasonable, they left out the one thing by which the Interstate Commerce Commission could determine what rates were just and reasonable.

The Supreme Court, in 1896, and again in 1897, laid down in plain, specific terms the rule for determining reasonable rates, namely: the fair value of the property and the fair return upon that value after paying the cost of maintenance and operation.

Then came the enactment of the Hepburn law, and Congress did again what it had done in 1887: it said that unreasonable rates were unlawful, but withheld from the Interstate Commerce Commission any means of ascertaining reasonable rates. It deprived the Commission of the standard by which it could measure the reasonableness of rates; it refused to incorporate in that law authority to determine the physical value of the railway properties of the country. And so the agitation went on until even some of the

railroads demanded that the Interstate Commerce Commission's hands should be strengthened by giving it the power to ascertain the physical valuation of the property of the carriers for the purpose of adjusting railroad rates in conformity with the knowledge in its possession.

During my years in the lower house of Congress and the years I have served in the Senate, the question of the physical valuation of railroad property, as a basis of the establishment of reasonable rates, has been to me one of the vital questions affecting us as a nation. With whatever ability of which I am possessed I have labored early and late for the passage of a bill that would clothe the Interstate Commerce Commission with these powers, to the end that there might be a fair adjustment of rates between shipper and carrier.

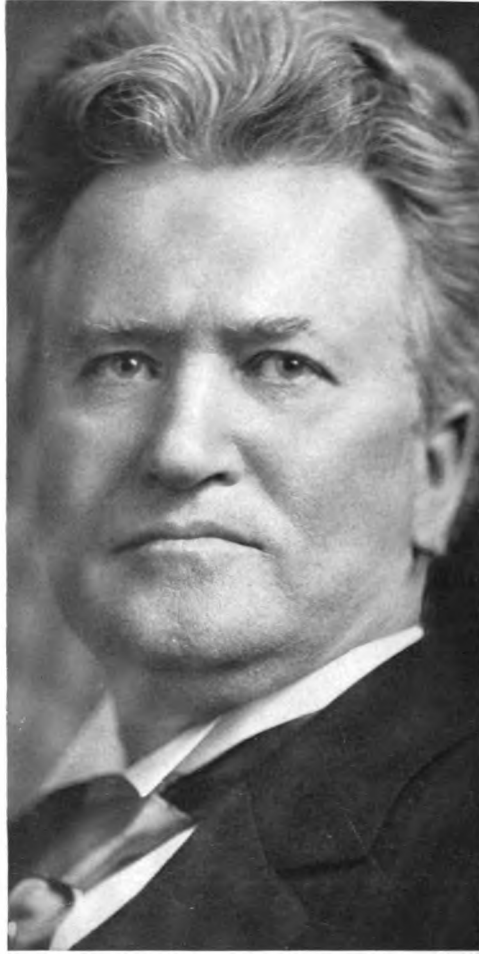
With our widely different institutions, our complex system of State and National Government, our marvelously rapid growth and development, the intense struggle for wealth and the industrial centralization which have taken place in this country, the control of transportation in the United States is distinctly an American problem; and, of the very necessity of things, the regulation of railroad rates is correspondingly distinctly an American problem. After I had seen the Interstate Commerce Commission's findings reversed in the Supreme Court on numberless occasions, because of later information filed with the Court than the Interstate Commerce Commission had at the time of rendering its decisions, the predominant thought in my mind was that equal justice could be done, to carrier as well as shipper, only through a careful, painstaking research into the value of the railroads, their tangible

holdings, their stocks and bonds, their rights-of-way, of everything which goes to make up their property.

After all the agitation which has gone on for a quarter of a century or more, I may be pardoned if I feel a personal pride in saying that, in the closing hours of the Sixty-second Congress, the so-called "Physical Valuation Bill" was passed and is now upon the statute books. The organization for the physical valuation of our common carriers is now being constructed by the Interstate Commerce Commission.

It is not possible to make an accurate prediction as to the time that will be required by the Commission charged with the duty of valuing the property of railroads to execute its great and important task, but whatever the time and at whatever cost, provided the work is done thoroughly, it cannot fail to be of enormous value not only to the shippers and consumers, but also to the investors in our railroad properties. It will tend materially to the creation of a more wholesome public sentiment toward railroads.

I have never contended that the Commission will be able to determine with mathematical exactness the cost of the service in shipping a single article carried with a mass of other freight. The traffic manager cannot do that. I have contended that the Commission can ascertain a fair value of the property of the railroads; the cost of their maintenance and opera-



© Harris & Ewing
SENATOR ROBERT M. LAFOLLETTE

tion; the fair profit, interest or return which the corporation is entitled to receive. With this knowledge as a basis, giving due consideration to all other material circumstances, the Commission can determine reasonable rates that will afford the carriers "just compensation" for the service performed. And with this knowledge the Commission will be able to form a just judgment with respect to a reasonable rate for a single shipment. The Interstate Commerce Commission can in no other way determine the reasonableness of a rate.

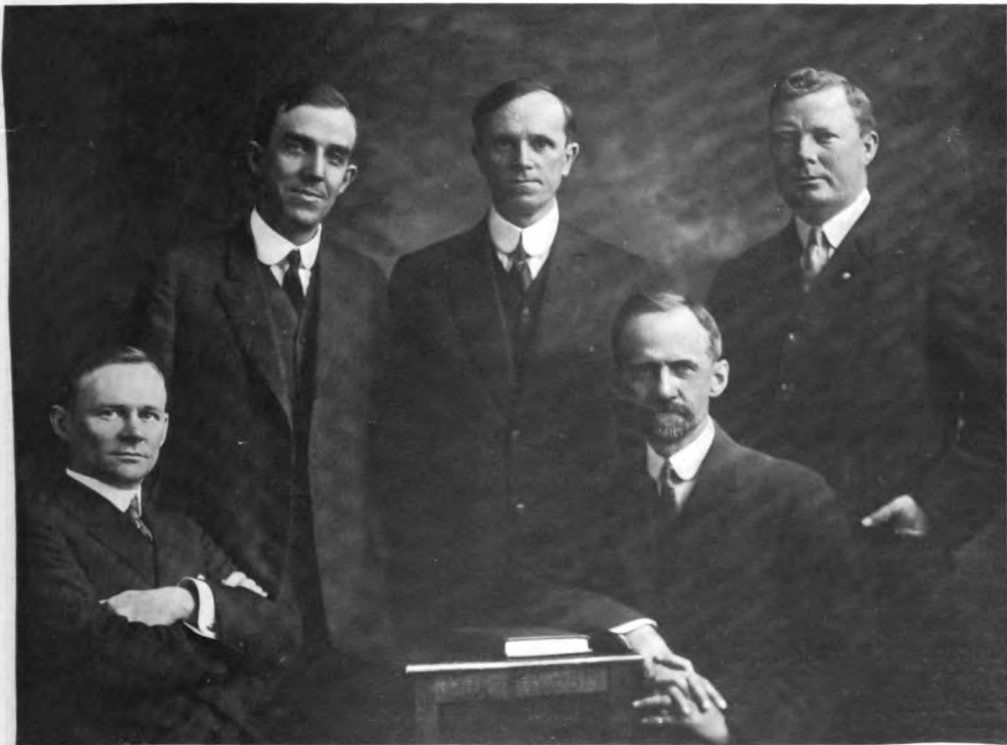
The railroads, during all the years that the struggle has been on to secure reasonable rates, fought, in every way, against adopting into law this one and only standard of reasonableness. They contended that it would be unfair to them; that it was an impracticable and visionary scheme. When Wisconsin, Michigan and Texas valued the railroad property within those States, these statements lost any force which they may have had with those who were willing to accept these assertions. In Wisconsin, where the contest against valuation and against commission-made rates was even more bitter than it was in the national field, we demonstrated that the property of these carriers could be fairly valued. We had a more difficult problem than the Interstate Commerce Commission must face.

Our state railroads are not only used for state, but also for interstate trans-

portation. Our State is so situated that the large terminals of the railroads which traverse it are outside of the State. We had to value those terminals and apportion to Wisconsin its just share of the burden of value in those properties. We had to divide the state from the interstate business. The traffic originating and terminating within the State amounted to in the neighborhood of twenty per cent. of the total traffic. We ascertained not only the revenues from the intrastate but also from the interstate traffic; we apportioned these revenues, accrediting to the State its just share. The same division was made for freight and for passenger revenues. We did more. We ascertained the cost of operation and we did that which prior to that time was said to be impossible—we apportioned to freight and passenger, to interstate and to intrastate traffic, its just share of operating expenses. We made such a differentiation of revenues and expenses as had never before been made, and did it with such fairness

that neither the valuation nor the divisions were challenged by the railroads.

While this valuation was under way there was great public clamor for a reduction in the rates on this commodity or on that article. The Wisconsin commission carefully filed each complaint, but, until it had a basis, it would not act. Once the valuation was made, it began in a comprehensive way to take up the study of rates. The result has been that reductions have been made which cause a saving upon the intrastate business in that commonwealth of upwards of \$3,000,000 per annum. This has been brought about without doing injustice to the railroads. It has been done with the acquiescence of the railroads. When these roads knew that the Commission was so armed with all the facts as to the value of the property employed in the service and the cost of doing the business that it could successfully defend its rates, they did not challenge the rates. They accepted them and admitted their reasonableness.



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BOARD OF ENGINEERS FOR VALUATION OF RAILWAYS

IT IS EXPECTED THAT THIS COLOSSAL TASK WILL TAKE TEN YEARS' TIME AND COST \$12,000,000. FROM LEFT TO RIGHT: HOWARD M. JONES, J. S. WORLEY, EDWIN F. WENDT, WILLIAM D. PENCE AND R. A. THOMPSON

A like result should follow in the national field, if the work which the Interstate Commerce Commission is now undertaking is done with like thoroughness. I am led to believe that the work of the Commission will be carefully and thoroughly done. I hope that at all stages of this great undertaking the public interest will be guarded.

The problem of the railroads now is to make this valuation as favorable as possible to their interests. They have perfected an organization and are surrounding the Commission with a body of high class experts whose business is to impress upon the Commission that their property is entitled to a higher value than that which, under a fair consideration of all the facts, would be given to it. The higher the value, the higher the rates. The lower the valuation, the lower will be the level of the rates which the public will pay.

There need be no fear for the railroads. They will be able to look after their interests. They cannot be wronged. The courts will not permit it. The public could not harm the railroads if it would, and it would not, because to do injustice to the roads would be to do injustice to the whole country. The public and the Government, national, state, county and municipal, have at all times been liberal with the railroads. The total amount of public donations, now represented in the capital of the railroads of the country, is estimated to be upwards of \$2,000,000,000. A people thus generous with this class of property will not attempt to work any petty injustices.

The magnitude of the work required of the Interstate Commerce Commission by Congress begins to appear when it is realized that there are 250,000 miles of railroad with all of the cuts and fills and grades and culverts and bridges to be surveyed and appraised. Every class and kind of railroad property will be listed, the condition ascertained and given its true value. There are the complicated problems which will enter into the valuation of the terminals in the large cities. There are the thousands of stations and the hundreds of railroad shops with their complicated appraisal problems.

Then there is the rolling stock, the 50,000 passenger cars, the 60,000 locomotives in all the various stages of depreciation, and

upwards of 2,250,000 freight cars, grading from the little wooden cars, placed in service in the early seventies, to the great steel cars of the present time. In fact, nothing can be or will be overlooked.

Many of the railroad companies have come to a full realization of the importance of having something tangible upon which to base their objections, if they have objections, to the rates which may be established by the Interstate Commerce Commission. Anger has given way to reason and this changed attitude, I am pleased to say, has come about through a larger knowledge and a better appreciation of what is contemplated by the act.

The railroads of this country have never been dealt with unfairly; they have had the best of it all the while. The people have built the railroads by contributions from the public domain, loans of public funds, and in gifts of money and of the proceeds of state, county and municipal bonds. One hundred and ninety-seven million acres of land have been donated to the railroads, enough to make five States as large as Pennsylvania; and even greater than all else is the contribution made by the people through excessive transportation rates which they have paid.

With these facts well in mind the physical valuation of railroad properties will come, in my judgment, as a blessing to the whole people, for it will make possible the rule of measuring reasonable rates, and, without such a valuation, the "hit-and-miss" policy of the Interstate Commerce Commission would have gone on forever.

Three things belong to the public at the hands of every transportation company that holds a franchise, and the Government owes it to the public to secure those three things—reasonable rates, impartial rates and adequate services. On the other hand, it owes it to the railroad company to see to it that it has a fair return on the fair value of its property—no more and no less. Now, for the first time, the Government is putting itself in position to require the railroad to discharge its obligations in full measure. The railroads, through more than half a century, have had more than their own. The people now, so far as transportation rates and services are concerned, are coming into their own.

SOLDIERS OF SURF AND STORM

By ROBERT H. WATKINS

Illustrated from special photographs by CHAS. A. HARBAUGH

"FAR superior to any other in the world, the United States Life-Saving Service needs nothing more than pay fairly commensurate with its proved worth to make it the noblest and finest of our public institutions. With all the fame of its achievements, recognized and lauded in every land, the compensation of its groups of heroes manning every station is less than the average wage of the ordinary day laborer who never needs to be exposed to storm and hazard of life."

OF all the institutions which have grown with the growth of this ever-expanding Republic, there is none in which its citizens may more rightfully cherish pride than in the United States Life-Saving Service—and it is much to our discredit that it must be added that there is none for which, in proportion to its merits, less has been done. Many are the facts of record which attest its excellence and many are the brilliant features that illumine its beneficent and heroic history.

Universally admitted to be the best life-saving service in the world, the record it has made, the lessons it has learned in stress of weather and height of tempest, the example it has set, its bravery, fortitude, vigilance and mortal sacrifices have won it unstinted praise in every land that borders the sea and in every country in which concerted efforts have been made to provide against the rigors of weather and the perils of storm. Begun modestly in the earliest years of the Republic, with the banding together of a few citizens of New England; organized but forty-two years ago under the Federal Government and being constituted a separate and distinct government institution only thirty-five years ago, it has long since outstripped the life-saving organizations and achievements of the foremost maritime nations of the Old World, surpassing them in every branch of the service, in organization, equipment, discipline and in the number of lives rescued and in the value of property saved from destruction.

The forthcoming annual report of the



Harris & Ewing

United States Life-Saving Service for the fiscal year just closed, will show, as it has done every year since its establishment, the conspicuous intrinsic worth of the institution. The recent Ohio River Valley floods brought the service into action, and it has been justly able to give an excellent account of itself. To ascertain the value and importance of the work of the crews sent from the nearest

stations to the scenes of that awful disaster, the House Committee on Appropriations, which had to provide funds for the emergency, recently called for and had printed the special report on the subject made by Superintendent Kimball to Secretary McAdoo of the Treasury Department. The report of Superintendent Kimball is made up largely of reports to him by the captains of the crews operating under orders from the Treasury Department.

The extent and magnitude of the disaster is shown by the fact that in the State of Ohio alone, according to the figures of the American Red Cross Society, the flood cost 454 lives, 100,000 persons were rendered homeless and property valued at \$250,000,000 was destroyed. So swift and terrible was the rush of the waters following many days of torrential rains, that the afflicted population was appalled and panic-stricken and called for help from all quarters. The Federal Government responded instantly, cooperating with the State governments of Ohio, Indiana, Illinois and Kentucky, and sending forward great quantities of supplies, officers and men of the Army,

the Navy, the Marine Hospital Service, and the Life-Saving Service. Mr. Kimball's report, in simple fashion, gives a complete account of the operations of the men of his service.

Seven of the crews of the service, which were dispatched to the flood region upon orders from the Treasury Department with the first information of the magnitude of the calamity, proceeded from their stations at Louisville, Kentucky; Cleveland and Lorain, Ohio; Michigan City, Indiana; and Chicago, Evanston and Jackson Park, Illinois, to Dayton, Ohio; Fort Wayne, Terre Haute and Peru, Indiana; and Cairo, Illinois, where they rendered prompt and invaluable assistance in rescuing and succoring flood victims. Additional crews, at Ocean City, Maryland; Virginia Beach, Virginia; Erie, Pennsylvania; Fairport Harbor and Marble Head, Ohio; Kenosha, Wisconsin, and South Chicago, were ordered held in readiness for speedy response to any further calls for help, but their aid was

not needed, their comrades in action having successfully coped with the emergency.

The seven crews, operating under directions from Washington, rescued and succored 3,509 persons—1,120 at Dayton, 101 at Cleveland, 3 at Lorain, 1,050 at Covington, 80 at Dayton, Kentucky, 38 at Louisville, 68 at Fort Wayne, 43 at Peru and 1,005 at Cairo. Of these, 472 were rescued from positions of imminent peril and 3,037 were succored with food, clothing and much needed medical attention.

The Louisville crew, which was the earliest to reach the flooded region, did arduous and gallant duty in Ohio and Kentucky. They left their station at 3 A. M., March 27, under Keeper John F. Gillooly, on telegraphic order from Superintendent Kimball sent the night before. They were directed to proceed to Cincinnati and use their utmost endeavors to reach Dayton, Ohio, and instructed to employ assistance if necessary.

The crew reached Dayton on the evening of the 27th but, fully equipped as they were, they could do nothing until the next morning, when, with their boat provided with rations, they explored the flooded regions of the city. They found, as the keeper's report says, "men, women and children crying for food and water; they had had neither since Tuesday morning, the 25th." Many ill and injured persons were carried by the crew to places where they were given proper attention. The crew then continued to patrol the flood-wrecked parts of the city.

It was their prompt work and the information they imparted as to true conditions which revived the hopes of the appalled community. The assurance the life-savers gave that the loss of life from the flood had not been



THE FIRST UNITED STATES LIFE-SAVING STATION, AT SANDY HOOK, N. J., MARKS THE BEGINNING OF THE BEST LIFE-SAVING SERVICE IN THE WORLD.



A MODERN LIFE-SAVING STATION, AT JACKSON PARK

THERE ARE NOW 284 STATIONS, LOCATED WHERE ROUGH HEADLANDS, ISLETS, REEFS, ROCKS AND BARS IN INTRICATE CHANNELS IMPEDE NAVIGATION AND IMPERIL CRAFT IN STORMY WEATHER. THEY COVER MORE THAN 10,000 MILES OF COAST, 2,500 OF WHICH ARE ON THE LAKES.

near as great as had been feared and reported heartened the people on all sides and nerved the hand of help everywhere. It had been estimated that over 1,500 persons had perished, but the number of fatalities discovered, as only the life-saving crew's efforts could disclose at that time, was not over 200.

Later the Louisville crew also responded to an urgent call for help from Covington, Kentucky, where they distributed food to hundreds of flood-bound persons. The same crew rescued and succored many people at the small town of Dayton, Kentucky, six miles from Covington. This crew, with others on duty at their home station, also did rescue and succor work at Louisville, saving live stock and households goods valued at many thousands of dollars.

The crew at Cleveland, Ohio, under Keeper H. J. Hansen, was already at work in that city along the overflowed Cuyahoga River, when they, too, received orders from headquarters to go to Dayton. They had already saved scores of persons from death by flood in the

Cuyahoga River, taking desperate chances with the result that not a life was lost. This crew had scarcely begun to rest from exhausting labors of many hours, themselves without food and exposed to stormy and cold weather, when they made ready to proceed to Dayton. The journey to the stricken city was accomplished only after great difficulties and vexatious delays, the high waters having badly demoralized the railway service between Cleveland and Dayton. At Dayton this crew did admirable rescue and succor work, not desisting until the waters had resumed their normal level, although in five days the men had but little food and but five hours' sleep.

The old Chicago crew, the Michigan City and the Evanston crews rendered invaluable service at Fort Wayne, Peru and Cairo. A crew report from the last-named city as late as April 12 says:

"The situation may be imagined when it is known that 2,700 persons had left the city. When we reached the place, the one great anxiety of all was: 'Will the levees hold?' Had they broken, Cairo would



ON THE WAY TO A WRECK WITH A SURFBOAT

EACH STATION IS EQUIPPED WITH SELF-BAILING 26-FOOT SURFBOATS, 36-FOOT SELF-RIGHTING GASOLINE MOTOR BOATS, AND EVERY UP-TO-DATE ARTICLE OF LIFE-SAVING EQUIPMENT, INCLUDING VEHICLES FOR TRANSPORTING THE BOATS.

have been under 18 or 20 feet of water, and it would have required quick work to get the people to safety. This was the work the people looked to the life-saving force to do, and it was the consensus of opinion that we would have been able to do it. Our appearance, therefore, had the effect of quieting the fears of the timid, and inspiring the strong with confidence. It was a common thing to hear members of the relief committee and prominent citizens remark: "We are mighty glad you are here. We feel safe now." This confidence in us was unbounded."

The Government's life-savers fully jus-

tified the confidence they inspired. They rescued and succored over a thousand persons at and around Cairo, extending their operations even as far as the Missouri shore of the Mississippi River, saving whole families and many individuals suffering from fright, thirst and hunger. Through the efforts of the crews all were supplied with medicines, food and needed clothing. The suffering may be imagined when almost freezing rains were incessant and the sufferers were without either food or shelter.

The public health departments of the flood-ridden communities were so over-



RETURNING ASHORE WITH SHIPWRECKED PERSONS

THE CREW MUST SOMETIMES WORK FOR MANY HOURS WITHOUT REST OR FOOD AND OFTEN IN COLD AND STORMY WEATHER. THE LITTLE PLAIN BLACK VOLUMES OF ANNUAL REPORTS ARE A COMPENDIUM OF DEEDS OF PERFECT HEROISM.

It is, indeed, notable that every progressive step taken toward the present strength of the service followed immediately in the wake of some shocking calamity on the coast. It was a series of disasters in 1854 that caused Congress to make the first considerable appropriation and provide for the employment of life-station keepers. Small appropriations were thereafter made from time to time, with a gradual increase in the number of employes and a slow but steady improvement in the character of the equipment.

During the war between the States and up to 1871 little was done for the material promotion of the service. In April of that year Congress gave authority to the Secretary of the Treasury to establish additional stations on the coasts of Long Island and New Jersey and to employ crews of experienced surfmen at such stations, for such periods as he might deem necessary, at a compensation not to exceed thirty dollars a month. Thirty dollars a month, with a gold or silver medal, for heroic fellows who risked their lives saving others! The pay was a streak of meanness and the medals of honor but baubles of mockery.

When Sumner I. Kimball was placed at the head of the life-saving branch, then under the United States Revenue Service, he at once began to make the best of the funds provided by Congress, having new houses built and stations equipped with the best modern apparatus and instituting a system of patrolling the beaches which has become famous the world over for its efficiency. Other appropriations were made in 1873 and 1874 and additional equipment provided along with a marked improvement in the entire system. The stations then became classified into three groups—lifeboat, life-saving, and houses of refuge for the wrecked and castaways.

In 1878 the service was separated from the revenue marine department and established as a distinct institution, with Mr. Kimball as superintendent. Far superior to any other in the world, the United States Life-Saving Service needs nothing more than pay fairly commensurate with its proved worth to make it the noblest and finest of our public institutions. With all the fame of its achievements, recognized and lauded in every land, the compensation of its groups of

heroes manning every station is less than the average wage of the ordinary day laborer who never needs to be exposed to storm and hazard of life. The pay of the surfmen is now about \$74 a month, including an allowance of 30 cents a day for food. Out of this wage they must supply their own uniforms, oil-skins and boots, besides supporting their families, with whom they cannot live at night and whom they may see only at intervals.

There are now thirteen life-saving districts, with 284 stations, of which 203 are on the Atlantic and Gulf Coasts, 62 on the Great Lakes and 19 on the Pacific Coast. The stations are located where rough headlands, islets, reefs, rocks and bars in intricate channels impede navigation and imperil craft in stormy weather. They cover more than 10,000 miles of coast, 2,500 of which are on the lakes. The stations for the Atlantic and Gulf Coasts are manned from August 1 to May 31, on the lakes from April 1 to December 1, and on the Pacific Coast for the entire year.

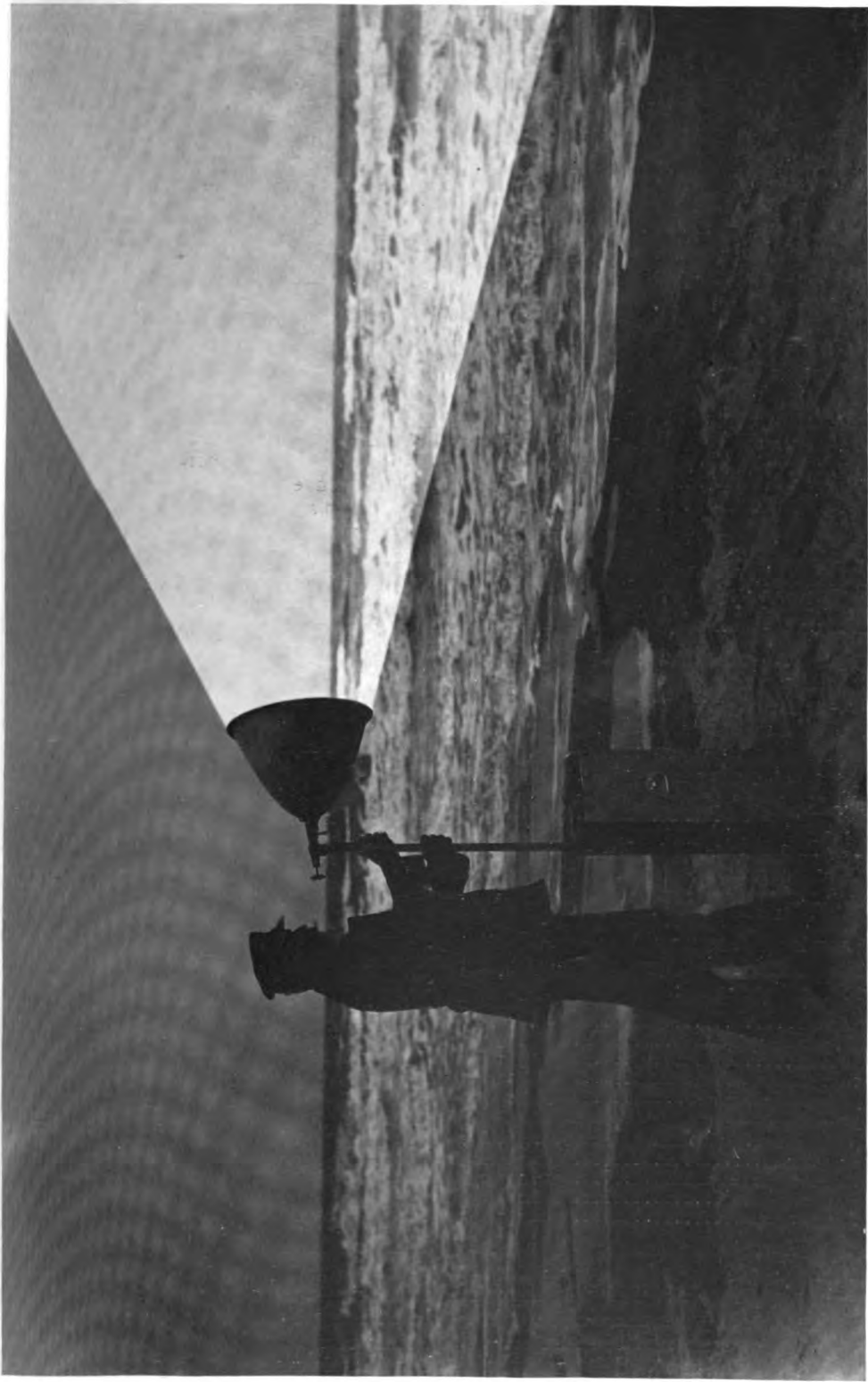
The lookout at the stations is continuous, day and night, with beach patrol during hours of darkness and in thick and foggy weather. The patrols connect with each other all along the coast line, the surfmen on patrol relieving each other at regular intervals and exchanging tokens of meeting which infallibly demonstrate whether they have done faithful duty. The stations are equipped with 36-foot self-righting and self-bailing gasoline motor boats, self-bailing 26-foot surf boats and every up-to-date article of life-saving equipment, including vehicles for transporting boats, breeches buoys, guns for life-line projection and an ample provision of medical restoratives and other provisions for suffering or destitute persons. Two of the 284 stations are floating stations—one at Louisville, in the Ohio River, and the other in Boston Harbor, moored and equipped for service peculiar to the localities.

The coast-lines are divided thus into districts:

First, Maine and New Hampshire; second, Massachusetts; third, Rhode Island and Fisher's Island; fourth, Long Island; fifth, New Jersey; sixth, Delaware, Maryland, and Virginia north of Cape Charles; seventh, the rest of Vir-



LIFE-SAVING CREW PERFORMING BURIAL SERVICE OVER THE BODY OF A SAILOR PICKED UP ON THE BEACH



THE BEACH ILLUMINATOR, EMPLOYED TO ILLUMINATE VESSEL AND ADJACENT WATER WHILE ENGAGED IN WRECK WORK AT NIGHT

ginia and North Carolina; eighth, South Carolina, Georgia and Eastern Florida; ninth, Gulf Coast; tenth, coasts of Lakes Erie and Ontario; eleventh, coasts of Lakes Huron and Superior; twelfth, coast of Lake Michigan; thirteenth, Pacific Coast.

No revenue is derived from the service, but the property it has saved amounts to so many millions of dollars that a fair and generous people have no complaint coming on that score. The last annual report of the service shows that during the fiscal year 1,730 vessels were involved in disaster within its scope, of which 455 were of the documented and 1,275 of the undocumented class, the latter being minor craft, such as launches, sailboats, rowboats, and the like.

The documented vessels had on board 3,731 persons, but 6 of whom were lost, and were valued, with their cargoes, at \$11,896,205. The smaller vessels carried 3,402 persons, of whom 10 were lost, and were valued with their cargoes at \$1,352,100. The total value of vessels and cargoes was \$13,248,305; loss in property, \$2,093,135. The entire service cost the Government \$2,346,881 for the year. Thus it is seen that the value of property saved was \$8,808,099 in excess of the service cost and the value of property lost. The average for the past five years shows such net saving of over \$9,000,000 annually.

The loss of life during the year was less than ever before in proportion to the number of persons and vessels involved in disaster. What has been accomplished by the service is shown by the records for the entire period, from 1871 down to 1912, in the following record:

Disasters.....	24,441
Persons involved.....	159,332
Lives lost.....	1,330
Persons succored at stations.....	24,201
Days' succor afforded.....	54,516
Total value of—	
Vessels involved in disaster.....	\$231,360,845
Cargoes.....	80,909,229
Property involved.....	318,270,074
Property saved.....	250,228,037
Property lost.....	62,042,037

Beyond the bare form of these cold statistics is a series of wonderful human experiences that are replete with some of the most thrilling incidents of American history. There has not been an annual report in all the forty-odd years of the existence of the Life-Saving Service that has

not had its stories of surpassing interest, many of its pages being warm and luminous with the humane conduct and obvious heroism of these public servants. The reports of every disaster, however serious, are short and simple and as unembellished as was ever any army report; but between the lines a moving eloquence is to be read of the unflinching merit, discipline and dauntless courage of the life-savers in the most terrible of tempests.

Men of the Army and Navy in action are moved by no such purely right incentives as those which sway the hearts and nerve the brawn of the "soldiers of the surf and storm." The armed organizations too often go forth to humiliate or destroy. The civic service is incomparably nobler; it would save the lives and the property of all peoples, help to restore their health and their possessions imperilled by the storm. Conflicts of human beings in arms against each other are made hideous by the worst of human passions; struggles of the life-savers with the merciless might of wind and water are made glorious by the best of human virtues.

"Greater love hath no man than this, that a man lay down his life for his friends." Any life in peril from wreck and storm is the life of a friend of the life-saver. Serving for a pitiful living wage, risking his all at every signal of danger, keeping the watch and patrolling the beach when the weather is such as drives every living thing to seek shelter, he is the poorest paid and the least recognized, yet the most deserving of all the public servants of the United States. If he lay down his life for his friends—friends whom most often he never knew or saw before the fatal hour—his family, if he have any, receive from the Government no more than a bare pittance of the wage allowance the dead hero might have earned within a limited period. If he becomes too old or has been disabled in the service, he receives no retirement pension, as do the men of the Army, the Navy and the Revenue Marine Service.

Efforts have been made from time to time for many years to have Congress do something like adequate justice to the Life-Saving Service, and a measure for better compensation, with a retirement pension, is now pending. Perhaps no member of Congress, nor any other single



THE BEACH PATROL

FROM SUNSET UNTIL DAWN THESE PATROLMEN ARE WATCHING ALONG THE COAST, WARNING VESSELS FROM INSHORE DANGERS. THIS BEACH PATROL SYSTEM IS FAMOUS THE WORLD OVER FOR ITS EFFICIENCY.



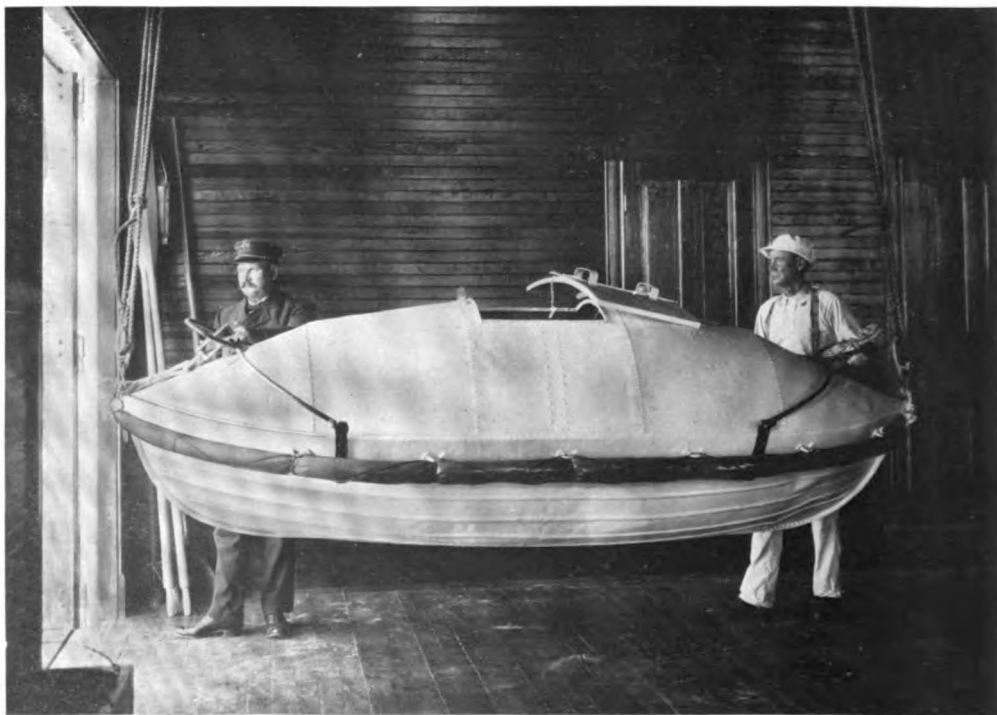
McKenzie, Duluth

THE WRECK OF THE "MATAAFA"

ON NOVEMBER 28, 1905, DURING A TERRIFIC STORM, THE STEAMER "MATAAFA" WAS WRECKED JUST NORTH OF THE ENTRANCE TO DULUTH HARBOR AND NINE OUT OF HER CREW OF 24 MEN WERE LOST.

citizen, ever devoted more time, labor and sympathetic attention to the cause and promotion of the Life-Saving Service than the late Samuel Sullivan Cox ("Sunset Cox"), no less famous for his kind heart and lofty humanity than for his fine wit

and sagacious statesmanship. He became interested in the service from its very beginning, and, indeed, was the foremost promoter of the present system in the national legislative councils and on the hustings.



THE LIFECAR, PART OF THE EQUIPMENT OF ALL STATIONS

MORE THAN 200 PERSONS WERE RESCUED BY THE LIFECAR THE FIRST TIME IT WAS EMPLOYED, AT THE WRECK OF THE SHIP "AYRSHIRE" OFF THE COAST OF NEW JERSEY IN 1851.

When in 1878 President Hayes nominated Mr. Kimball to be Superintendent of the Life-Saving Service, Mr. Cox said on the floor of the House: "He has by his skill and patience far outdone my most sanguine expectation of 1870, for he has brought into existence that system of patrol which puts the American life-saving establishment in advance of any in the world; that system by which, all night, from sunset until dawn, through all the months of tempest, no matter what the

crews of the interior went forward to humane and courageous service.

Reverting to the statistics of disasters and of lives saved and lives lost, a comparison of the record of the Life-Saving Service with the losses in the *Titanic* steamship disaster is quite worth while. The White Star liner *Titanic*, sunk April 14, 1912, in collision with an iceberg, carried 2,223 persons—1,324 passengers and a crew of 899. Of these, 1,517 perished in less than three hours. During



THE BREECHES BUOY IN OPERATION

THE APPARATUS IS ATTACHED TO THE SHIP'S MAST, AND THE BUOY IS HAULED TO AND FRO BETWEEN VESSEL AND SHORE

weather, those patrolmen and crews are watching along the coast from Maine to Florida, a cordon of marching sentinels."

Sumner I. Kimball, Superintendent of the United States Life-Saving Service, still in the harness, has been its chief from the beginning, forty-two years ago. In his seventy-ninth year, he is as one in the prime of life, for he is full of vigor and alert comprehension of the operations of the great service, with its ten thousand miles of coast to be guarded. His hand was at the helm during the great floods in the Ohio River Valley, and at his word the

forty-two years, within the scope of the United States Life-Saving Service there were 24,441 disasters, involving 159,332 persons, and in all that time and in all those disasters, with all those human beings in peril, but 1,330 lives were lost, 187 less than in the one steamship disaster.

There were heroes, to be sure, in the *Titanic* disaster—heroes in the crew and among the passengers. Their courage and sacrifices have been lauded the world over, quite largely, it must be confessed, for human vanity—in proportion to their social and financial standing. Perhaps more

money has been contributed by the public to perpetuate the remembrance of the *Titanic* heroes than the public has given, all told, in recognition and support of the year-round heroes of the United States Life-Saving Service.

"Soldiers of the Surf and Storm," Sunset Cox called them in his noble appeals for these utmost friends of humanity. His last plea for juster treatment and fairer

If it be that the highest refinement of civil policy is the pursuit and attainment of human happiness, what object of society can be named in comparison with this paragon of institutions! Humanity, more beautiful than art, and more profound than science, has bent above the sad seas, with their wild waves and wintry storms, her ethereal bow unfolding its prism of promise. Its covenant removes



LEISURE HOURS AT THE LIFE-SAVING STATION

LIVING FOR THE MOST PART IN ISOLATED LOCALITIES, THE LIFE-SAVERS HAVE LITTLE OPPORTUNITY FOR DIVERSION AND MUST FURNISH THEIR OWN AMUSEMENTS.

pay for the men of the service before he "crossed the bar" beyond "sunset and evening star" was in this clear call to public duty:

"As the administration of this service is more and more attested by results; as its head, Mr. Kimball, with a vigilance, anxiety and activity unexampled, pursues the law and supplements its inadequacies by the elevated tone and sleepless courage of its execution, the highest function of good government becomes visible amid and above the befogged and besotted policies and practices of selfish politicians.

the melancholy significance of the words of Jeremy Taylor as to our mortal life: 'a dark night and an ill guide, a boisterous sea and a broken cable, a hard rock and a rough wind, dash in pieces the fortunes of a whole family, and they that shall weep loudest are not yet entered into the storm, and have yet suffered no shipwrecks.' What sanction more holy than that of the preciousness of human life, illustrated in the fact and symbol of salvation of Him of Galilee, walking upon the waters, when He stretched forth His hand to save!"

SHOOTING THE KATSURAGAWA RAPIDS

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

"THE bottom of the boat was but one layer of wide, loosely fitted planks, between which the water came in spurts and gushes with each plunge and strain of the boat, and we speedily discovered that the narrow braces, if too high for a comfortable seat, were most desirable perches for people who dislike wet feet. Our Japanese companions, on their high lacquered clogs, were indifferent to such discomforts, and watched our precarious balancing and swinging of anxious feet with some amusement."

IT was a summer afternoon of long ago, when Dai Nippon and Kyoto still knew very little of strangers from across the seas, and everybody—at least everybody that one knew—was young. True, when one thought of it, which was not often, there *were* older people, just as there were old temples and ancient history and, at proper seasons, one paid them due respect, but as a whole they were but a background before which youth played life's real part. How the point of view changes with a quarter century! Search memory as I will there appears no trace in my Japanese year of "people of middle-age," those who seem in the great majority today. There were old people, "ver' oord peoperr," as my Japanese friend would agree, and all the rest were on the sunny-side of twenty-two. But then—at sixteen, twenty-five is old, frightfully old. Perhaps—but all this is apart from my story.



We were loitering by the bronze dragon which spouts cool, clear water where the worshippers at Kiomidzu wash hands and mouth before prayer—one must pray with clean lips in Japan as well as a clean heart. The afternoon had been profitless so far as excitement went, and we had expected so much. Even the sunshine seemed pale and the air tasted flat and dusty.

Tokiwa, the sister of Hatsu—my friend's rosy-cheeked maid—had a very sick husband and a day or two before Hatsu, very grave, very unlike her usual cheerful self, had told us that the doctors had done him no good and that Tokiwa was preparing to "go to Kiomidzu." "Go to Kiomidzu?

Kiomidzu? That is where you went, Hatsu, when you were in love with Momotaro, the kurumaya, and he——," but Hatsu had shuffled away quietly, blushing, but very, very sober. Plainly this was no time for teasing and "going to Kiomidzu" might well be a more serious affair than imploring Enmusubinokami's aid with one's lover. One does not cry for that. One claps one's hands, one makes a little prayer, one drops a sen

or two in the box and ties a bit of tough rice-paper in the grating. There's the only difficulty. One must tie the knot with the thumb and little finger of one hand. Hatsu told us that it was "ver' easiry done" if one practiced a little beforehand and one was all alone—but when people were watching—"Ah! *nakanaka mudsuk-ashi*"—"ver' differcut."

But Kiomidzu has other shrines; indeed, that of Enmusubinokami, the patron-saint of lovers, is but a small affair in the shadow of the great temple of Otowosan Seisuji, dedicated in 798 to Juichimen Kwannon, the many-armed goddess of mercy.

Everywhere in Japan Kwannon is popular. Her temples are the biggest, the most crowded; her gardens are the gayest, the merriest, the noisiest, for Kwannon is not only merciful but accommodating, and, unlike Dai Butsu, Great Buddha, who demands stillness and peace, she permits all sorts of merry-making to go on within the precincts of her shrines.

Kiomidzu, pleasant and picturesque upon its hillside, is not, however, the noisy, dusty, clamoring place that Asaksa,

Kwannon's Tokyo temple—best known and most popular in all Japan—can be, nor are there here the great array of booths, chattering vendors of trinkets and tokens, of eatables and drinkables, the tea-houses, theatres and show-places that fringe Asaksa's walks and draw attention from the shrine. Nevertheless, one has here one's placid diversions. Below lies the city spreading in every direction to steep hills, blue green in the summer haze. Across it wriggles Gion-Machi in a great Z, the street of bazaars that tonight, when all the great lanterns are lit before each shop, will look, from our home on the hill, like the roof of a great temple outlined in fire upon the dusk of the sleeping town.

Up and down the steps that lead to the temple go and come a constant procession of women and children, gay as tropical birds in their summer robes, the shining blue-black hair uncovered and glistening like polished ebony in the sun. Kwannon is the woman's friend; her miracles endear her to every sorrowing, suffering heart, and here at Kiomidzu they put her wonder-working powers to a hard test, indeed. The temple platform juts from the side of a steep hill supported by a many-storied scaffolding of stout timbers, rising far above the tall tree tops of the valley below. According to a local superstition an ailing husband might receive health from Kwannon if his believing wife sprang from this platform and—yet greater miracle—"if she did it with a good heart"—i. e., faith—she would not receive the slightest injury.

I lean over the railing and look down, down into the greenness. Far below me the trees are whispering together. What they say I cannot tell—but they know why a safety-fence has been built outside the temple rail. Either Kwannon slum-

bered at her task or the "good hearts" were lacking—too many mangled women have been found in that pleasant green valley—and after many fruitless efforts to educate or by some means to persuade people to give up the practice, the authorities finally forbade it and secured obedience by the ignominious "catch-all." Custom dies hard and superstition not at all.

Hatsu had assured us that there were ways and means of avoiding the screen and that Tokiwa meant to do it. Certainly we had not wanted her to do so and had gone to Kiomidzu to prevent it. None of us would willingly have seen pretty, gentle Tokiwa jump to her death—or, worse yet, a life of pain and helplessness—nevertheless there is a charm to youth in evading law—we had wanted to see *where* she would try it.

But Tokiwa did not come. All the long, sleepy afternoon we had waited. Except for the occasional scrape of a *geta* on the stone path, the low-toned boom of a great bell, the temple was silent. Worshippers shuffled in and out quietly, pausing before this or that shrine; on the still, warm air hung the faint odor of incense, of rice-straw, of heavy oils from thickly pomaded heads, the familiar scents of all popular Japanese temples; now and then there was a murmured word as an acquaintance passed, with much bowing and sucking of breath; occasionally a pilgrim, dusty, travel-stained, his once white clothes all spotted with the red seals from temple-stamps, lingered by the bronze dragon for longer than the perfunctory ablutions and awakened momentary interest—excitement there was none.

"Maybe she go to Kamayama," murmured Hatsu, "maybe so—but I don't zeenk so." "Kamayama? What for?" "Kintaki, he bring Danna San retter, you



MEGAME-NO-TOKO—SPECTACLE BRIDGE, KYOTO.
LOTUS GROWING IN THE FOREGROUND

know; yes, retterman; Kintaki, he say eef one go Kamayama, take boat orr arone, no one erse orr, and pray orr time, boat go down river orr right too, man get werr'—but I don' zeenk so, Tokiwa don' zeenk so." "Kamayama? Where is that, your Tortoise Mountain?" "Oh," says our friend, "have you never been there? That's where Kyoto goes to shoot the rapids on the Katsuragawa." "Dangerous? No! not in the least. I've been down a dozen times and never heard of an accident. In the spring, when the snows melt and the rains come, the river runs full and fast and one goes down in an hour or so; to-day it would take twice as long. But it's always safe enough with a good boatman; I haven't enough faith in Kwannon to try it alone, have you?" No. We were quite sure that we had not, at least not until after we had tried it once or twice with a pilot, but excitement we must have, the afternoon had cheated us. The trip was arranged for the next day.

Hatsu was sent to spend the day with her sister and help nurse the "honorable

brother-in-law," who had suddenly taken a turn for the better and needed no help from Kwannon, for the time, at least; so we felt quite comfortable about him and Tokiwa also as early—"ver' earry"—next morning, our jinrikshas rolled smoothly across Kyoto and into the pretty green country beyond. Tortoise Mountain lies about 6 *ri* (15 miles) from the city, the pleasant road running through many quaint villages of a delightfully picturesque land. Here farmers are busily re-puddling their luxuriant rice fields; here a group of women are preparing vegetables for the Kyoto markets; there a boy is pounding rice, and another is making baskets under his father's eye; there in that grove is a temple, one sees its sloping roof; beside our road is a tiny shrine. Now we pass a group of merry children, shouting and bowing to the strangers; a grim-faced, clean-shaven priest strides unheeding on his way; a moment ago we were in a warm green valley; now we are climbing a steep, little hill whose tree-tops brush the sky. How familiar it all is and



THE TEMPLE OF KIOMIDZU AT KYOTO

THE TEMPLE PLATFORM JUTS FROM THE SIDE OF A STEEP HILL, SUPPORTED BY A MANY-STORIED SCAFFOLDING OF STOUT TIMBERS. NOTICE THE SAFETY FENCE WHICH HAS BEEN BUILT OUTSIDE THE TEMPLE RAIL.



ON THE KATSURAGAWA

IT SUDDENLY NARROWS, HASTENS ITS PACE AND RACES INTO A NARROW GORGE WHERE IT FOAMS ABOUT GREAT WATER-WORN BOULDERS AND FRETS IMPATIENTLY AT STEEP CLIFFS.

yet always how strange; for all its gay color, its variety, its novelty, it is a quiet landscape; one misses the sound of singing birds that make glad our home woods.

I do not know what Kamayama may be to-day. No doubt there is a "foreign hotel" beside the river where "coupons" are accepted for *tiffin*, and very probably Cook & Son have a fleet of boats ever ready to personally conduct parties down stream. But then—in that summer of long ago and for many another after it—Kamayama was but a sleepy place on the river brink, dreaming in the sunny stillness of its ancient memories. Once it had owned a castle, but only moat and walls remained; once it had been important, the residence of a great *daimio*, but that had all sunk far into the past when we came; then it was a place of many little tea-houses and chaffering boatmen, living tranquilly upon what very few foreign travellers and many native sightseers came its way.

The boats beached beside the stream looked scarcely appropriate for shooting

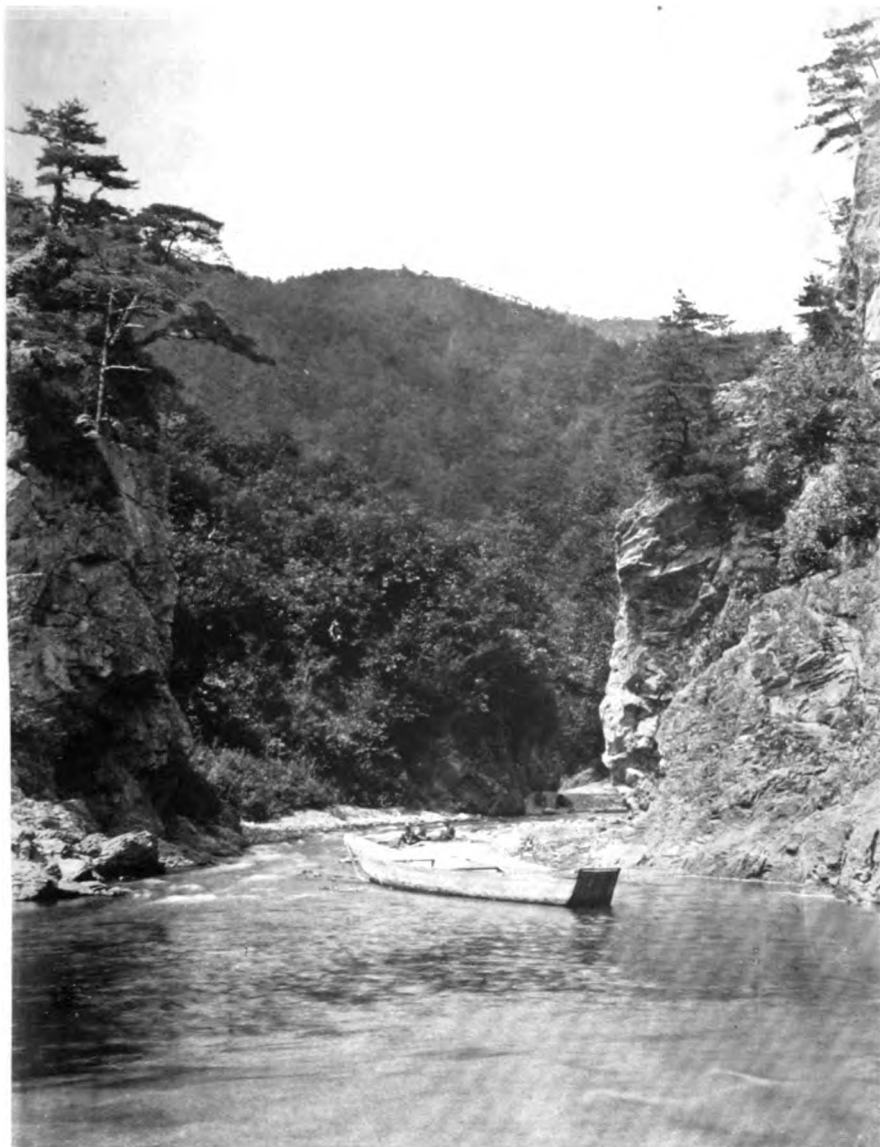
rapids. Forty feet long and possibly seven wide, with high sides made rigid by a few cross-pieces that served also as seats but were too high and too narrow for the purpose, the craft looked unwieldy, clumsy, little calculated to take the bends of a narrow, rapid river. Our Japanese friends assured us, however, that they were "Orr right, ver' comfortarber," and, with some misgivings, we, our three rikshas and six runners were loaded aboard.

The bottom of the boat was but one layer of wide, loosely fitted planks between which the water came in spurts and gushes with each plunge and strain of the boat, and we speedily discovered that the narrow braces, if too high for a comfortable seat, were most desirable perches for people who dislike wet feet. Our Japanese companions on their high lacquered clogs were indifferent to such discomforts, and watched our precarious balancing and swinging of anxious feet with some amusement. It is most mortifying to be unable to chronicle any danger greater than that

of wet feet upon a summer day—but one must be truthful even at the expense of pride.

In time of spring-time flood or autumn

at the bow with a long, bamboo pole, the other at the stern with a *yuro*, a yet longer scull—but as the river was low and our boat heavily loaded, it was thought best



A GREAT QUIET POOL LYING LIKE A MOUNTAIN LAKE WITHIN A RIM OF STEEP, GREEN HILLS. AT THE JUNCTION OF THE KIOTAKIGAWA AND THE KATSURAGAWA.

rains one might perhaps find "one's heart in one's mouth," but on that particular summer day upon the Katsuragawa I am quite certain that mine remained in its customary and comfortable place.

Ordinarily one has two boatmen—one

to add two others to help us through the sluggish stretches of the river.

The first mile runs dreamily through a flat plain, farmland, fields, bamboo thickets, beds of rushes fringing its banks; then it suddenly narrows, hastens its pace and

paces into a narrow gorge where it foams about great water-worn boulders and frets impatiently at steep cliffs. Here the boat strains and creaks and twists like a thing in pain as the bamboo pole and the heavy scull thrust and shove and swing it between the rocks; the water froths up between the planks; some spray blows over the side, we feel a bump, a jar; we squeal delightedly and, clinging to our seat, await the next thrill.

The boat slips past the last rock into a great quiet pool lying like a mountain lake within a rim of steep green hills. How far they tower above us to the sky—feathery bamboo, oak, maple, birch and pine; here and there a patch of scarlet, a blush of rose, a gleam of white, azaleas still gladdening the gray rock with lovely bloom; at the foot a little stretch of shimmering yellow sand and the placid water reflecting every drifting cloud upon its blue. But the boat, which seems to float motionless at the centre of all this exquisite silence, quivers suddenly with life and glides softly shoreward, discovers a sharp corner in all the greenness, swings abruptly about and is again plunging between rocks and foam.

It seems to be a huge boulder that effectually bars the way, but the bamboo pole finds a socket in its water-worn surface, the long boat swings as on a pivot, and beyond the river opens broadly before us, running breathlessly but composedly through a smiling landscape. Again you shoot a tiny stretch of bubbling water, again you float in a land-locked pool, but the perils of the journey are behind you;

you no longer clutch the seat, you no longer "mind your feet"—they are soaked, so what can another wetting matter—you are at leisure to watch the fisherman perched on his slippery rock, a live *ai* for bait, tempting trout from their dusky haunts to the water-filled oilskin bag which holds his catch; to note the wonderful richness of the foliage, its marvellous variety of tones, to imitate the cry of a bird, to follow a passing cloud-shadow, purple on the hills, and then you are at Arashiyama (Wild Mountain) and *tiffin*.

Doubtless to-day it is a Tamed Mountain with European bills-of-fare and "all modern conveniences" at restaurants, which are tea-houses no more. There are those who could tell me, but I do not wish to know. Pleasant in memory are the cool white mats, the open screens through which the murmur of the river, the whisper of the hills came softly, the fragrance of freshly-made tea (the photographer is saying "what about *daikon*," but the secret of happy travelling is learning to forget as well as to remember and I am deaf to his questioning) and the merry chatter of the girls who serve us.

From Arashiyama to Kyoto again is a matter of an hour that our 'riksha men (Kurumaya) cover merrily. The afternoon ends with tea at Ginkakuji—the silver-roofed temple—in the midst of wondrous gardens. Hatsu comes to meet us with the news that Kurando, the honorable brother-in-law, is almost well again, and Oksama San may be quite sure that Tokiwa will not go to Kiomidzu.



THE COOSA-ALABAMA RIVER

By WILSON M. HARDY

*"IT is an unfortunate characteristic of almost every other long inland waterway that its low-water stage makes navigation impossible for about three months in the summer, and its ice flow in winter makes it impossible for another three months of that season. Boats ply the Coosa-Alabama every day in the year, with neither drought nor ice to hinder. * * * * Only the Mississippi and Tennessee, among Southern streams, exceed the Coosa-Alabama in actual discharge."*

WITH a flow three and one-half times as great as that of the Ohio at Pittsburgh, and twice that of the Hudson at Albany, the Coosa-Alabama River is conceded to be the second greatest navigable waterway system in the United States. It is one of those charming Southern streams whose names are the only memorials left to us of the noble Cherokee, the Indian whom Senator Robert Owen claims as his ancestor. "Coosa," being interpreted from the vernacular of the Cherokee, means "Big Water;" and, in reality, it is much bigger than most people imagine.

The head of the stream is found up in the mountains of North Georgia, where the blue skies of the Southern Appalachians meet the earth in a halo of azure. The Connasauga and the Coosawattee form the Oostanaula at a point fifty miles north of Rome, Georgia. The Oostanaula and the Etowah flow together at Rome into the Coosa. The Coosa and the Tallapoosa have their confluence near Wetumpka, from which point the stream is known as the Alabama. Not far from Mobile, the Tombigbee merges its waters into those of the Coosa-Alabama, flowing a short fifty miles into the Gulf under the name of the Mobile River.

A legend that possesses more than a poetic basis of fact tells how, in the days of the flood, the headwaters of the Coosa-Alabama were one with those of the Tennessee, and how a white man made the trip in a canoe from Chattanooga, Tennessee, to Mobile, Alabama, by way of Rome, without once stepping out of his



Photo by Moeller

boat. In fact, this route formed the basis of the first national appropriation for the survey of the Coosa, with the idea of using it as a link in connecting the Mississippi River with the Atlantic Ocean.

The fact is established that the navigable headwaters of the Coosa-Alabama River are separated from the Tennessee River at Chattanooga by only thirty miles. From that common point it is only 850

miles to the Gulf by way of the Coosa, and 2,700 miles by way of the Tennessee and Mississippi Rivers, yet the Government has spent millions on improving the longer route where it has spent thousands on the shorter.

General Marshall, late Chief of Engineers of the United States Army, who in his early career as an engineer was stationed on the Coosa-Alabama, held this stream as second only to the Mississippi. In arriving at this conclusion he took into consideration the remarkable constancy in the flow of the river and its freedom from ice. Only the Mississippi and Tennessee, among Southern streams, exceed the Coosa-Alabama in actual discharge.

It is an unfortunate characteristic of almost every other long inland waterway that its low-water stage makes navigation impossible for about three months in the summer, and its ice flow in winter makes it impossible for another three months of that season. Boats ply the Coosa-Alabama every day in the year, with neither drought nor ice to hinder.

A total of \$1,500,000 has been spent on improving the Coosa-Alabama, beginning in 1876 with a parsimonious appropriation



GOVERNMENT TUG USED IN WORK ON LOCK AND DAM AT MAYO'S BAR, EIGHT MILES BELOW ROME, GA.

of \$30,000. The money has come at such irregular intervals, and so far separated, that in the year 1913 only 10 per cent. of the work necessary to complete the river for through navigation from Rome, Georgia, to the Gulf of Mexico has been completed.

The stream is open with a four-foot channel from the Gulf of Mexico to Wetumpka, Alabama, a distance of 350 miles. The barrier in the Coosa-Alabama lies stretched along a distance of 116 miles between Wetumpka and Lock 4. From Lock 4 to Rome, another 200 miles has been made navigable and carries annual commerce to the value of \$5,000,000. Both portions of the river have been successfully navigated for more than seventy-five years.

Just as the chrysalis must struggle to gain release from its cocoon, yet by the struggle emerges in a higher form, so nature in her wisdom has made of this barrier an infinite blessing which will ultimately develop here the busiest manufacturing district in America. The improvement of this 116 miles for navigation will harness at the same time 300,000 horse-power, enough to turn the wheels of a whole State. The stream falls 250 feet in 48 miles, and in this short distance alone 150,000 horse-power is available even without storage reservoirs. At five cents per kilowatt hour the income from this power would be over \$40,000,000 per

year, an amount nearly three times as much as is necessary to open the river.

A lock and dam are now being constructed at a cost of \$241,000, at Mayo's Bar, eight miles below Rome, for the further improvement of the upper section of the river. At the same time a small



VIEW OF OPERATIONS AT LOCK 4 ON THE COOSA-ALABAMA RIVER, SHOWING COMPLETED DAM AND WORK IN PROGRESS ON THE WALLS OF THE LOCK.

appropriation is being expended in completing Lock 4, 25 miles below Greensport. Locks 1, 2 and 3 have long been in operation.

A total of fifteen locks is called for to open the river its entire 750 miles. The five locks already built or under construction have cost \$1,500,000; the remaining ten will cost \$13,000,000, but the saving in freights on the commerce which will be carried by the completed river will balance this comparatively insignificant sum in one year's time.

The 10,000 square miles of territory drained by the Coosa-Alabama River is a country whose beauty is beyond description. Its fertile fields of cotton and corn, its hillsides of peaches and apples, its primeval forests of pine and oak, its mines of coal, iron, aluminum, manganese, barites and pyrites, its quarries of marble, limestone, granite, slate, graphite, cement rock, ochre, clay and kaolin, and its factories making all these things into the finished products of commerce, enrich this section by an amount of natural resources without a superior on the globe. No other

river in the world taps such a variety and wealth of minerals in commercial quantities.

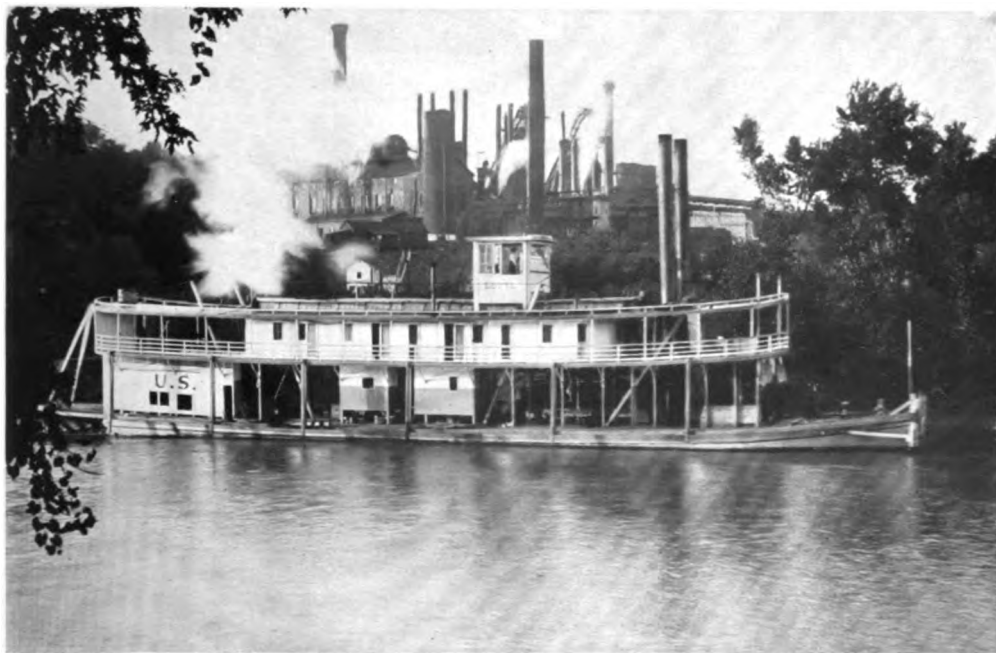
At the present time there are 600,000 spindles busy making yarn and cloth from the 400,000 bales of cotton grown every year in the valley. The normal production of coal is 500,000 tons; of iron ore, 2,000,000 tons; of pig iron, 1,000,000 tons, and large quantities of other minerals are produced in wonderful variety. Bauxite, the only ore from which aluminum is extracted, was first discovered in America at Rome, Georgia, and that district remains to-day the largest producer of bauxite. Only one other district in the United States is a competitor. Along a part of its course the Coosa-Alabama cuts its way through pure marble, in quality equal to the Italian product, and in quantity inexhaustible.

The territory has a total annual commerce of more than 20,000,000 tons, worth \$500,000,000; an increase of 125 per cent. in the past ten years. If the waterway were opened to the sea, it is estimated that 20 per cent. of the total trade handled in the valley would pass along the river.

Rome, a typical Coosa-Alabama city,

has more than seventy manufacturing enterprises; and so great is the variety of her resources that not more than four of them are engaged in making the same articles. Rome's population increased 66 per cent. in the decade between 1900 and 1910. Gadsden, Alabama, another typical river city, has almost as long a list of factories and almost as good an increase in population. Birmingham, Alabama, showed an increase of 132 per cent. in the last census period, and now has nearly 200,000 people. So every city and every community in the entire valley has blossomed, and awaits only the opening of this stream to enjoy a period of manufacturing and industrial development second only to that of New England.

The completion of the Panama Canal will form a double incentive to the improvement of Southern rivers, and especially those that empty into the Gulf of Mexico. Mobile is nearer Panama than any other American seaport, and, together with other Southern ports, already enjoys a large export business with Central America and the west coast of South America, as well as with China and Japan.



ON THE COOSA-ALABAMA AT GADSDEN

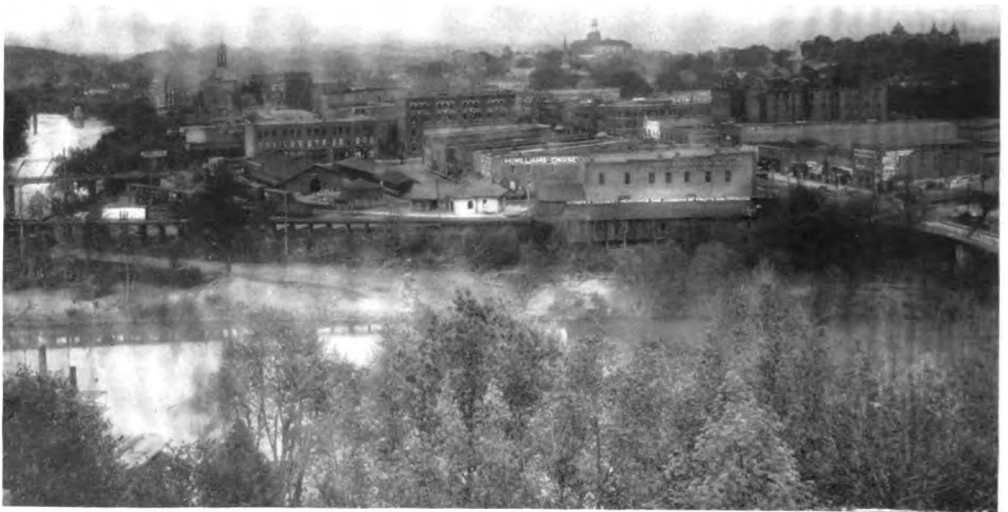
THE GOVERNMENT TUG IS LYING AT THE WHARF OF THE ALABAMA CONSOLIDATED COAL AND IRON COMPANY. A PORTION OF THE GREAT PLANT OF THE COMPANY MAY BE SEEN IN THE BACKGROUND.

The Massachusetts Cotton Mills at Rome, the Dwight Cotton Mill at Gadsden, and the other large cotton factories of this district manufacture almost exclusively for South American and Oriental export trade. The sugar growers of Louisiana and the West Indies have use for enormous quantities of lime and limestone for the fertilizing of their lands, as well as the refining of their sugar. There are vast bluffs of the finest limestone in America overhanging the Coosa-Alabama River at a dozen different places. The limestone trade alone would almost justify the opening of the stream.

The development of hydro-electricity in the Coosa-Alabama valley in the past

Alabama Interstate Power Company, they have secured the right from Congress to build the dam at Lock 12 and have already begun construction work upon it. In developing this 50,000 horse-power, the power company saves the Government \$1,000,000.

The peculiar character of the soil in this Coosa-Alabama valley belies the theory so often advanced among conservationists that denudation of forests increases floods and decreases the constancy of streams. As more and more of the forests in the Coosa-Alabama valley have been cut down, and more and more of its soil placed in cultivation, floods on the stream have grown less severe and less



A BIRD'S-EYE VIEW OF ROME, GEORGIA

THE OOSTANAULA AND THE ETOWAH FLOW TOGETHER AT ROME INTO THE COOSA. THE COOSA AND THE TALLAPOOSA HAVE THEIR CONFLUENCE NEAR WETUMPKA, FROM WHICH POINT THE STREAM IS KNOWN AS THE ALABAMA.

five years has brought the cost of power to a point where steam coal may soon go begging. Almost every city along the entire length of the river has its water-power; and English capitalists have recently announced the investment of \$30,000,000 in further improving the water-powers of the valley and creating a market for their power by manufacturing enterprises. Under the name of the

frequent, and its minimum flow has considerably increased. This apparent phenomenon is explained by the character of the soil, which, when cultivated, absorbs much more water than when covered by forests. The foothills of the Appalachian Mountains, in which this remarkable stream has its head, enjoy the heaviest rainfall in America, east of Oregon, averaging over seventy inches per year.

CREATORS OF PROSPERITY

By S. A. THOMPSON

HOW does it happen that the German railways can enlarge their mileage, double their equipment, multiply their efficiency and increase their dividends while at the same time they are lowering their rates for both freight and passengers, and decreasing their capitalization? The German statesmen, with an experience of forty years to guide them, are spending millions of dollars to improve the waterways which compete with the state-owned railways from which the greater portion of the governmental revenues is derived. Are the German statesmen fools?

III

SOME OBJECTIONS CONSIDERED

IT would seem that only one conclusion could be drawn from the facts and figures which have been presented, viz.: that the improvement of our waterways constitutes at once the greatest opportunity and the highest duty confronting the people and the Government of the United States. Public sentiment in favor of such action has increased rapidly in recent years. A multitude of organizations have been formed, each of which advocates the improvement of some particular waterway, and all of which are united to form the National Rivers and Harbors Congress which advocates, not a project, but a policy. This policy includes the continued development of lake and ocean harbors, the creation of a comprehensive, carefully planned, truly national system of connected waterways, and the provision of the organization, the equipment and the funds to accomplish this result as speedily as possible.

But there are those who strenuously oppose this program, saying that the present and prospective needs of commerce and industry (except such as are necessarily supplied by wagon roads) can best be met by the further extension and development of railways, and that the expenditure of large sums upon waterways is therefore unwise and unnecessary. The number of articles advocating this line of action which have appeared in newspapers and magazines in recent years is a significant indication of the growth of public sentiment in favor of waterways—and of the existence of some organized interest opposed thereto. It is worth while to examine some of the arguments advanced in support of the claim that the gigantic

and vitally important task of transportation shall be entrusted in its entirety to the railways.

It is often pointed out that the Mississippi and other western rivers, which at one time were alive with steamboats carrying both passengers and freight, have lost the greater portion of their traffic, which has been absorbed by the railways. This is held as proof positive that the waterway is outgrown and discredited as an agency of transportation. Mr. Logan G. McPherson, in an article in the *Atlantic Monthly* for April, 1910, said:

"In the United States the railways demonstrated their superiority not only over the canals, but also over the rivers, in large measure displacing even the steamboats for which the Ohio and Mississippi rivers and their tributaries were famous."

The result is undeniable—how was it accomplished? No. 4 of the "findings" of the Inland Waterways Commission was as follows:

"While the decline of navigation in the inland waterways was largely due to the natural growth and legitimate competition attending railway extension, it is also clear that railway interests have been successfully directed against the normal maintenance and development of water traffic by control of water-fronts and terminals, by acquisition or control of competing canals and vessels, by discriminating tariffs, by rebates, by adverse placement of tracks and structures, and by other means."

In the fifth "finding" it is said:

"So large a portion of railway traffic is free from water competition that railways can readily afford to so reduce rates on those portions affected by such compe-

tion as to destroy the profits of the water lines without appreciably affecting the profits of the rail systems which recoup these reductions by higher rates elsewhere."

The following specific instance is given in a report prepared for the Inland Waterways Commission by the Bureau of Corporations:

"The opening in 1883 of the Louisville, New Orleans & Texas Railroad, now known as the Yazoo & Mississippi Valley Railroad, an Illinois Central property, went far toward accomplishing the downfall of steamboat traffic on the lower Mississippi. The railroad paralleled the river from Memphis to New Orleans, reaching all the important towns on the east bank of the river. . . . From river competitive points such as Vicksburg the rail rate dropped as low as 45 or 50 cents per bale to New Orleans, while from points back from the river such as Rolling Fork, Miss., about 40 miles from Vicksburg and 10 from the river, the railroad recouped itself by charging \$1 to \$2 per bale."

Mr. McPherson frankly states, as a matter needing no apology:

"Both in England and in the United States these results were obtained by the railways so reducing their rates to and from places between which they had water competition, that the boats could not continue in service. . . . In obedience to primal law, in the struggle for existence there was survival of the fittest."

If the writer hereof should seek out Mr. McPherson and, either by reason of greater strength or the possession of superior weapons, should take his life, that also, just as truly as the other case, would be a survival of the fittest. But in civilized lands the old primal law of "Let him kill who can" has been superseded, so far as individuals are concerned, by the law of peaceable co-operation. The fundamental reason for the organization of governments is the protection of life and property. We pay policemen and maintain standing armies to prevent citizens from killing each other off, because it is to the interest of the state that all its citizens shall live and work for the state's upbuilding. It is equally to the interest of the state that all its agencies of transportation shall be maintained and made to contribute to its development. When we shall wake to a

realization of this fact, which has long been recognized by the governments of Europe, laws will be enacted, and enforced, which will prevent destructive competition between railways and waterways, both of which are essential to our growth and prosperity.

It is also urged that railway rates are so much higher in Europe than in the United States that traffic seeks the waterways in order to escape the intolerable burden which those rates impose. Mr. George G. Tunell, in a report to the Chicago Harbor Commission, says:

"The average freight rate per ton-mile on the United Prussian and Hessian State railroads during 1906 was 13.41 mills, while the average rate in the United States was but 7.48 mills."

This is one of the finest examples in existence of a statement which is absolutely true but which, standing alone, leads to a conclusion absolutely false. The rate per ton per mile is a convenient generalization which has a place and a use in the discussion of transportation questions, but we must know the services performed as well as the charges made before we can decide which of two rates is the more economical.

Two reports on American railways have been made in recent years by expert German investigators, one by Mr. G. Franke, published in the "Archiv fur Eisenbahwesen," the other by Messrs. Hoff and Schwabach, who were especially commissioned for the purpose by the Prussian Government. These keen-eyed, competent observers point out a large number of differences in the basis on which the statistics are compiled, which differences make a bare comparison of the average rates per ton per mile entirely misleading.

The cost of loading and unloading freight, and other terminal expenses, is the same whether the haul be short or long, hence the ton-mile rate decreases with length of haul—and the average haul of traffic on the government roads of Germany, considered as a system, was (in 1905) only 78 miles, while in this country on all railways, considered as a system, the average haul was three times as great, or 244 miles. It might almost be said that in Germany all traffic is local traffic.

The average rate per ton-mile on American railways is greatly depressed by the

circuitous routing of traffic. In the final report of the Industrial Commission examples were given showing that large amounts of freight are sent by roundabout routes which are from 60 to 250 per cent. longer than the shortest available lines. Nothing of the kind is done on German roads.

One of the most vital differences pointed out by these German observers is the fact that a large amount of freight which in the United States is handled by fast freight, private car and refrigerator car lines, is handled in Germany by the railways direct. In Germany, therefore, the statistics represent the total price paid for the service, while in this country they represent, not what the public pays to the private car lines, but the much smaller amount which these latter pay to the railways over which they operate.

Furthermore, the class of business which is carried in this country by express companies is divided in Germany between the fast freight service operated by the railways and the parcels post. No figures are available from which to calculate the average charge per ton-mile on the traffic carried by express companies in the United States, but the published tariffs show rates on general merchandise running as high as \$1.00 per ton-mile for short distances. That is about the highest rate published for the territory east of the Mississippi River and the average is no doubt much nearer to 10 or 12 cents than to the higher figure, but it is a matter of common knowledge that express rates are very much higher than freight rates, there being of course a difference in the service also. The occasional distribution of stock dividends of 200 per cent. and cash dividends of 28 per cent. additional is a further indication of the difference between the amount collected by the express companies—which is a part of the transportation taxes paid by the American people—and the amount received from the express companies by the railways and reported by them to the Interstate Commerce Commission.

Our railways charge the Government much more for the transportation of mail matter than they charge the express companies for the transportation of express matter in the same trains. In Germany one postal car on every train, with all its

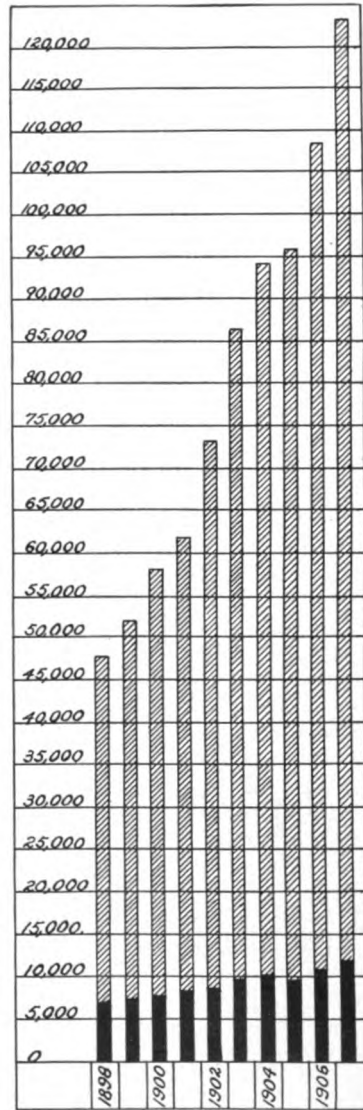


DIAGRAM NO. 4
Deaths (in black) and injuries on United States railways 1898-1907, as reported to the Interstate Commerce Commission.

contents and the clerks in charge, is carried absolutely free, and any additional cars are hauled for a charge of from eight to twelve cents per car for each mile run. It is interesting, not to say instructive, to compare express rates in the United States with parcels post rates in Germany, where a package of 11 pounds weight can be sent to any point within 46 English miles for 6 cents and to any point in the Empire for 12 cents, and packages are accepted

up to a maximum weight of 110 pounds.

Three different classes of rates enter into the making of the average rate per ton-mile: local rates, usually high, through rates (with which are included rates to points having water competition), which are much lower, and foreign rates, which are the lowest of all. The German commissioners found numerous cases where local rates in this country were four to five times as much as rates for similar service in Germany.

Many things, such as the fact that terminal costs are the same irrespective of the length of haul, justify a charge per ton-mile which is less for long hauls than for short hauls, but the Germans, owning both their railways and their waterways, make equal charge for equal service on their railways whether the lines are near to or remote from waterways, which is the exact reverse of American practice. In fact, German rates, in some instances, are so fixed as to induce the movement of heavy articles of small value, such as coal and ores, by water instead of by rail, so that the rail lines may be free to give prompt movement to traffic of a higher class. The total traffic of the German railways in 1905 was 27,652 million ton-miles. If it had been possible for them to haul, in addition to this, the 9,300 million ton-miles of low-grade traffic carried on the German waterways, the average railway rate per ton-mile would have been largely decreased, but the transportation taxes of the German people would have been a good deal higher than they were.

Foreign rates also are arranged upon a different basis in the two countries. Rates on oranges from California to New York are made exactly equal to the sum of ocean freights and import duty on oranges from the Mediterranean—and a few years ago when Congress increased the duty on lemons the railways immediately raised the freight rate. It costs less to ship pottery products to Iowa from Liverpool, England, than from East Liverpool, Ohio, and only five cents a hundred pounds more to send plate glass from Antwerp, Belgium, to Denver than to send it from St. Louis to the same city. Some time ago transcontinental roads went out of the export business rather than make known their proportionate share of the through rate.

German railways also make a difference between domestic and export rates, but the rates are public and are designed to support the national tariff rather than to nullify it—to make it easy for the German manufacturer to bring in his raw material and send out his finished product, and hard for the foreigner to compete with him in his home market. The government-owned railways of Germany are operated primarily to promote the development of the nation; the privately owned railways of the United States are operated principally to produce dividends.

Commissioners Hoff and Schwabach, after a careful investigation, reported that when proper allowance is made for express, mail, company freight, private car line traffic, etc., when what the German public gets from its railways is weighed up along with what we do not get from ours, and the figures are calculated on the basis of prices paid for the same service, a true statement of the average freight rates would be 14.4 mills per ton-mile on the railroads of the United States and 9.5 mills on those of Prussia.

The average passenger rate in Prussia is .98 of a cent per mile as against 2.014 cents in the United States. The Prussian passenger service has been criticized by American railway men, whether justly or not it is not intended here to discuss, except to say that it is undoubtedly about what the German people want, for nowhere else in the world do the people have so large a voice and so direct an influence in determining the character of railway service, and the rates charged therefor, as they have in Germany. But there is one important point in which their service is incomparably superior to ours and that is in safety, for our railways kill more people every fortnight, on the average, than the Prussian railways do in a year.

Diagram No. 4 shows, for the fiscal years 1898 to 1907, inclusive, the number of deaths and injuries reported by the railways of the United States to the Interstate Commerce Commission. From this it appears that the number of casualties sufficiently serious to be reported has mounted steadily higher year after year. For 1907 the figures were 11,839 killed and 111,016 injured, a total of 122,855. This grim total is equivalent to 33 persons killed and 304 injured for every

day in the year. Because of the panic in the latter part of 1907 the freight carried in each of the fiscal years 1908 and 1909 was, in round numbers, 18,000,000,000 ton-miles less than in 1907. Coincident

The German roads, with 32,000 miles of line in 1905, had about one-third as many employes, and hauled about one-half as much freight, as did the American roads with their 214,000 miles of line. The



THE RAILROAD RECORD FOR 1912

KILLED: 303 PASSENGERS, 3,788 EMPLOYES, 5,501 TRESPASSERS, AND 1,270 OTHER PERSONS, A TOTAL OF 10,052; INJURED: 10,416 PASSENGERS, 150,750 EMPLOYES, 5,900 TRESPASSERS, AND 5,592 OTHER PERSONS, A TOTAL OF 187,757.

with this tremendous falling off of traffic there was also a decrease in the number of deaths and injuries, the report for 1909 showing 8,722 killed and 95,626 injured. Traffic increased again in 1910, and so did the accidents, the killed that year numbering 9,632 and the injured 119,507.

German roads, however, carried nearly 185,000,000 more passengers than the roads in the United States. In spite of this tremendous difference in relative density of traffic the official figures show that in proportion to the number of passengers carried and employes at work in

that year, the railways of this country killed six and a half times and injured twenty-nine times as many passengers, and killed three times and injured twenty-five times as many employes as the roads of Prussia.

Many things contribute to the safety of travel on Prussian railroads, a prominent factor being the number of men employed for the especial purpose of preventing accidents. The German commissioners already quoted say that if American railways were as carefully guarded as are those of Prussia, we would have 636,000 men employed for that purpose, while the number actually employed (in 1905, when the investigation was made) was less than 50,000. The people of the United States could well afford to pay a higher rate per ton-mile for their freight if they could not only travel for less than half the present rates, but could also know that when they do travel, the danger of getting killed would be only about one-seventh, and of getting hurt about one-thirtieth, as great as it is now—or, to be exact, as it was in 1905.

There is one other point which must not be omitted in this effort to get at the real meaning of the average rates per ton-mile reported for the two countries, and that is the tremendous difference in the contributions to governmental revenues. The German railway system is decidedly a solvent institution. In 1907, after paying for maintenance, operation, repairs, renewals, new equipment, local taxes, interest on bonds, contribution to the sinking fund, and every other item which the careful German accounting required to be deducted, there remained an absolutely net profit of \$164,000,000. Since the German roads are practically all owned and operated by the states, this handsome amount went into the state treasuries. The amount paid in taxes to subordinate political divisions was about \$5,000,000 more, making a total contribution to governmental revenues of \$169,000,000.

This is considerably more than twice as much as the amount paid in taxes by American roads in the fiscal year 1907, which was \$80,108,006. The difference becomes still more striking when we take into consideration the much greater mileage of the American lines, for if these latter had paid as much per mile of line as

did the German roads, they would have contributed to the treasuries of the states, cities, counties and other minor civil divisions of the United States, not \$80,000,000, but more than \$1,110,000,000.

If the net profits of the German roads had been used solely for that purpose, the railway debt would before now have been paid in full, with interest, leaving the entire system with its equipment as a net asset in the hands of the German states. These chose rather to put the proceeds of the transportation taxes into their treasuries, reducing by that much the amount to be raised by other forms of taxation. During the twenty-five years that the German railways have been owned and operated by the states of the Empire, the mileage has been nearly doubled, the equipment considerably more than doubled, and the efficiency of the system increased at least threefold. Both passenger and freight rates have been reduced, but profits on the capital invested have risen from 4.9 to 7.52 per cent., while the net income per mile of line operated was \$5.050 in 1907 as against \$1.976 on American roads.

Between 1890 and 1907 the railways of the United States increased their capitalization by \$13,020 per mile of line; between 1883 and 1902 the German railway system, besides paying for itself in net profits, reduced its capitalization by \$2,527 per mile. It is not claimed that the German railway system is perfect, and the writer is most emphatically not an advocate of government ownership and operation of railways in the United States. But there would be a good deal to say in favor of a railway administration which could accomplish the results outlined above, even if its average freight rates per ton per mile were actually, instead of only apparently, higher than those on the railways of the United States.

A number of recent writers evince surprise, not unmixed with sorrow, because the governments of the earth, as a rule, collect only insignificant tolls for the use of canals and no tolls at all for the use of improved rivers. Mr. McPherson, from whom quotation has already been made, states that the results of this policy are shown by "statistics that are startling." Concerning one of several instances referred to by him, he says:

"The revenue from the interior waterways in 1905 was over \$2,300,000 less than the expense for maintenance. If there be added thereto interest on the capital at 3½ per cent., amounting to \$4,637,750, it is found that the charge borne, without offset, by the State of Prussia during 1905 for its interior waterways amounted to nearly \$6,500,000."

Belgium, Russia, and other countries, are also referred to and the charges are given which are borne, "without offset," for the maintenance of waterways.

Apparently nothing is to be considered as an offset but a direct return in cash through tolls or charges, but if this be the true basis for calculation the governmental expenditures which are totally "without offset" are both many and large. For instance, there was spent in 1911 on the public school system of the United States over \$450,000,000. Since no charges were made for the education given, this large expenditure must have been "without offset." (Was this not also a flagrant example of unfair competition by the Government with schools maintained by private enterprise?) Something might be said also concerning the expenditures made, not by the Government but by the people, for the maintenance of churches and other religious institutions, but it is better that our attention should be confined chiefly to matters connected with transportation.

Canals and rivers are not the only highways for the use of which no tolls are charged. We have in the United States about 2,250,000 miles of public roads. If the land contained therein, which is somewhere between 13,000,000 and 15,000,000 acres, is worth as much as the lands adjacent thereto, its total value may be roughly approximated as \$150,000,000. But Bulletin No. 32, issued by the Office of Public Roads, states that the expenditures on public roads in 1904 were \$80,000,000, in round numbers, which is equivalent to 4 per cent. on \$2,000,000,000.

Then there are thousands of miles of streets in the cities, towns and villages of the country. Some of these are bordered by real estate so valuable that the income of the average citizen for a year would be too little to buy a square foot of it. Many are paved with materials of various kinds, most of which are costly—some of them,

sometimes, unnecessarily so. Some of them are cleaned every day, and some are tended day and night by a force of white-suited employes who sweep up every bit of litter as fast as it falls. Here is land, which would readily sell for billions of dollars in cash, the use of which for any productive purpose is positively prohibited.

No figures are available as to the amount which has been spent on the improvement of streets, alleys and roads in this country, but it must be enormous. If we could get at the annual cost of maintenance of all the city streets and country roads in the United States, and add to that the interest at 4 per cent. on all that has been expended on their improvement, the sum total would mount up to scores of millions of dollars. And since all the streets and almost all the highways are free of tolls, this vast expenditure is entirely "without offset."

Vast quantities of lands have been granted to aid the construction of railroads in the United States. In Louisiana one ninth, in California one eighth, in Nebraska one seventh, in Wisconsin, Iowa, Kansas, North Dakota and Montana one fifth, and in Minnesota and Washington no less than one fourth of the total area was donated for this purpose. The area of the lands granted by the National and State Governments is equal to that of the thirteen original States and greater than the area of Germany and Italy combined, or of France, Great Britain and Belgium. The value of these lands at the time they were granted was probably not less than \$500,000,000.

In addition to this imperial domain, other large amounts of land were given by counties, townships, cities and individuals. The Northern Pacific was built into Superior, Wisconsin, in consideration of a free right of way, which was so chosen that it took most of the water front, and a deed to "one-third of all lands, premises and real estate." This was not an extreme case. During the eighties, when railroad building was most active in the Dakotas, the usual terms exacted from the owners of town sites included free right of way and station grounds and a deed to every alternate lot. The area of these lands was, of course, much smaller than that of the lands granted by Congress and the



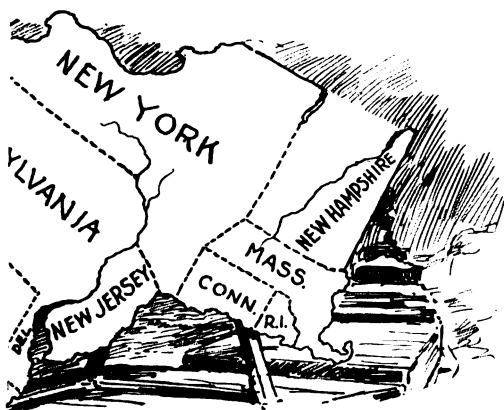
LAND GRANTS TO UNITED STATES RAILWAYS

THE AREA OF THE LANDS GRANTED BY THE NATIONAL AND STATE GOVERNMENTS TO AID THE CONSTRUCTION OF RAILROADS IN THE UNITED STATES IS EQUAL TO THAT OF THE THIRTEEN ORIGINAL STATES AND IS GREATER THAN THE AREA OF GERMANY AND ITALY COMBINED, OR OF FRANCE, BELGIUM AND GREAT BRITAIN.

States, but the value was probably as great.

Besides these grants of land, enormous both in area and in value, our railways have received financial assistance from sources ranging from the National Treasury down through States, counties, and cities, to pioneers striving to carve out homes in the forests or turn the prairies into farms. At one time the Pacific railways were indebted to the Government for bonds and unpaid interest in the sum of \$130,000,000, but all but about \$6,000,000 has since been paid. Another \$6,000,000 was contributed in rebates in the tariff

on imported rails. No complete compilation of the figures has ever been made, so we must be content with indications and estimates. The net amount contributed by the State of Missouri was \$25,604,344, and towns and counties in the same State gave \$8,124,075 more. Two hundred and ninety-four cities, towns and villages in New York gave \$29,978,206 and fifty-one counties in the same State gave from \$5,000 to \$3,000,000 each. In 1853 Wheeling had a railroad debt of \$1,100,000; St. Louis, \$2,500,000; New Orleans and Pittsburgh, \$3,500,000 each; Baltimore, \$7-830,000; and Philadelphia, \$8,154,000.



The census of 1870 showed that there were still outstanding \$185,000,000 of county bonds issued in aid of railroads.

Of other grants to railroads space remains for the mention of but two. One is the exemption from taxation at the same rate as other property. The taxes paid by railroads in 1907 were less than one-half of one per cent. on the capitalization. It follows that one of two things is true—either the roads are very heavily capitalized or very lightly taxed. The other item is composed of the franchises granted by States and cities. Rivers run by authority of Almighty God, but railways must be chartered by human governments. It is impossible to ascertain either what existing railway franchises were worth when granted, or what they are worth now, but it is interesting to speculate how much the companies would pay for the privilege of continuing to operate, if, through some inconceivable legislative foresight, it had been arranged that all these franchises should terminate at the end of the present year.

As is natural, when exact figures are lacking, estimates vary widely as to the aggregate value of all the gifts, grants, lands, bonds, exemptions and franchises which have been given in aid of railroads. Some put it as low as \$2,000,000,000; others say that fully half of the \$18,000,000,000 of railway capitalization is based upon donations made and franchises granted by government and people. Take the lower figure and put the interest at 4 per cent., although the current rate was much higher when many of the gifts were made, and the expense amounts to \$80,000,000 a year. And since the railways

have paid no rental for the lands and no interest on the money given them, this expense, which has already been running for fifty years or more, is entirely "without offset."

But the *reductio ad absurdum* is probably sufficiently complete. In founding and sustaining schools and churches, in laying out, improving and maintaining streets and roads, in giving franchises to railways, and adding enormous grants of lands and bonds to aid in their construction, government and people were seeking, not dividends, but development.

"Without offset," indeed! Some of the Pacific roads may have been so lavishly endowed that the value of the gifts was far greater than the cost of construction. Some roads may have been built for the sole purpose of blackmailing existing lines. But who can estimate or comprehend even the money value of the development which has come with, and largely because of, the building of railways? Who, until the coming of that poet greater than Homer, who shall write a poem grander than the Iliad, the epic of America, may fitly characterize the results which the railway has produced in higher realms—the cementing of national unity, the increase in human efficiency, the multiplication of opportunities, the broadening of mental horizons—results beyond the power of money to measure?

Equally is it true that the governments of the earth in making large expenditures for the improvement of rivers and the construction of canals have been influenced by considerations far higher, and have sought results much more far-reaching and important than the earning of dividends through the collection of tolls. A British Royal Commission has recently been studying the question of canals and inland navigation. Mr. W. H. Lindley, the distinguished engineer who made a comprehensive report to this commission on the waterways of the Continent, gives, among other things, statements showing the charge per ton-mile borne by the state on the traffic carried by water. A number of writers have made these statements the basis of elaborate arguments against waterways. Mr. Lindley also made some other statements, which, if they have seen, these writers have certainly not quoted. In his opening summary he says:

"The opinion on the Continent as to the value of waterways is best shown by the steps proposed and the moneys granted by the governments for their future improvement and development."

In the portion of his report devoted to Germany he says:

"The opinion existing in Germany on the value of waterways for handling the traffic in conjunction with the railways is given by the fact that the Prussian Landtag, on April 1, 1905, sanctioned a law for new works for a total amount of £16,728,750 (\$81,469,012.50), or for a sum equivalent to over 60 per cent. of the total sum hitherto spent on the waterways in Prussia."

In the fourth and final report of the Royal Commission there are repeated statements of a similar character. Referring to the Belgian waterways it is said:

"The state expects no return or profit upon the money spent upon construction or large improvement. It is considered in Belgium, as in France, that these works will increase the commerce and wealth of the nation, and that the increase of commerce and wealth will strengthen the national public revenue."

The Commission says further:

"That the use of the improved natural and artificial waterways in cheapening the transport of coal and other low-value traffic has increased the trade, industry and wealth of Germany, and so indirectly the revenue derived by the railways from passenger traffic and higher class goods; . . . and the state revenue at the same time benefits indirectly through the increased real income and spending power of the population consequent on the augmented industrial prosperity produced by cheap water transport."

The Royal Commission also calls attention to another point which our American writers seem to have overlooked. If the Prussian railways and waterways be taken together as parts of one great transportation system, the net revenue in 1905, after paying all costs of maintenance and operation and deducting interest on the capital, was \$159,039,151.70. This gave, in addition to all indirect benefits, a net income of more than 7 per cent. on the total investment. In the United States that same year railway stocks to the amount of \$2,435,370,337, being 37.16 per cent. of

the total, paid no dividends at all, and the average rate on those stocks which did pay dividends was 5.78 per cent.

IV

WHITHER THE SIGNBOARD POINTS

The conclusions reached and the recommendations made by the Royal Commission of Great Britain and Ireland are not without interest and significance to the people and the Government of the United States. That commission was appointed to seek a remedy for the depression in British trade and industry, which is especially evident in The Midlands, once the greatest manufacturing region in the world. One great factory after another has left its former location, which at most was only eighty-five miles from a harbor, and sought a new location on the seacoast. This was not a matter of choice, but of compulsion, for the owners found themselves not only beaten in the markets of the world, which they once had dominated, but even shut out of the market of London, only one hundred miles away, by manufacturers in the heart of Germany, five hundred miles farther away—but with water transportation available all the way.

The Royal Commission studied the canals and inland navigations of the Continent, and found a great, connected waterway system, with channels which have been continually deepened, widened and improved, so that they could accommodate larger and larger boats and carry an ever-increasing traffic. They found the valleys of these streams sown thick with thriving industries and filled with prosperous cities, some of which, as Frankfort did, grew more in one brief score of years after the coming of the waterway than in a thousand years before. And as a natural, inevitable, and invariable result they found, in every country visited, that the busiest and most profitable railways were those which lay closest to, and co-operated most fully with, the waterways.

They studied the canals and inland navigations of Great Britain and Ireland, and found, not a system, but a jumbled collection of odds and ends of waterways, no two sections having the same width and depth; all of them too narrow and too shallow for modern needs; most of them unimproved since 1830; all of them strangled by obstructions; some emas-

culated by adverse railway control of strategic sections; some lying derelict and abandoned, crushed by unfair railway competition. They found, not growth of trade and industry as on the Continent, but decay, as told in a preceding paragraph, and, as a natural and unavoidable consequence, a steadily decreasing rate of dividends on railway capital.

But there was one striking exception to the general rule, one bright spot in the gloomy picture, and that was in the vicinity of the Manchester ship canal. A brief and imperfect outline of the effect on Manchester has already been given, but it should be said that the six or seven million tons of traffic which have been developed at this new-made port were not stolen from Liverpool. That city, with the object of holding the trade built up through centuries of effort, made repeated reductions in its dock and harbor dues. In spite of these reductions—possibly in part because of them—her traffic grew faster than ever, so that in the thirteen years immediately following the opening of the Manchester Canal the revenue of the port of Liverpool increased more than five times as much as during the same length of time preceding that event.

The British Royal Commission learned from their studies that the influence of no other one thing penetrates so deeply into the very heart of industry and trade as does that of transportation. They learned that in the great race for commercial supremacy the position held by any nation depends chiefly upon the character, the efficiency and the economy of the transportation facilities with which it is provided, and that in the last analysis national existence depends largely thereon. They learned, beyond all doubt or question, that waterways are creators of prosperity for cities, states, nations—and railways.

They recommend—

That a permanent "Waterway Board" be created, which shall be made up, not of legislators with countless other calls upon their time, but of experts who shall give exclusive and continuous attention to its work.

That this Board be empowered to issue bonds to provide the needed capital.

That all the inland waterways of the United Kingdom be acquired as speedily

as possible and placed under the control of the Board.

That the first step should be the construction, at an estimated cost of about \$100,000,000, of two great waterways extending from the Mersey to the Thames and from the Severn to the Humber, lying across the Midlands like a gigantic letter X, with branches which would shorten the routes from north to south and from east to west.

That a comprehensive plan be formed, and carried to completion as fast as funds become available, which shall extend a connected system of modern waterways to every part of Great Britain and Ireland, so that the manufacturers of the United Kingdom may be able to compete on even terms with the manufacturers of the Continent in the markets of the world.

Details differ in our own country, but the same principles apply. Theirs is chiefly a problem of canals, ours chiefly a problem of rivers. (It goes without saying that in both countries there will be continued development of ocean harbors—with the addition in this country of the channels and harbors of the lakes.) Theirs is a problem of arresting decay, ours a problem of hastening development. But we, the same as they, need the permanent board or commission of experts, the comprehensive plan, the complete, connected system of waterways, and the bond issue in order that the needed work may be pushed to speedy completion.

The growth of the United States has been wonderful. But that growth is not finished; it is scarcely begun. If we shall have the wisdom and the courage to supplement our magnificent railway system with a splendid system of inland waterways, all the growth of the past will be but as a prologue to the mightiest drama of national development which the world has ever seen. If, by the improvement of our waterways, we shall make possible the utilization of all the multitudinous resources with which a bountiful Providence has endowed us, it needs no gift of prophecy to foresee the speedy coming of a day when America shall be so dowered with illimitable wealth, so girded with resistless might, that she may stretch forth the right hand of her power and say to all the warring tribes of earth, "Henceforth there shall be peace!"

BUILDING AN INDUSTRIAL EMPIRE

By GRANVILLE B. WALTERS

BUT after all, all this engineering, record-breaking in size, remarkable in efficiency and costing about \$25,000,000, is but the means to an end. The real objective of the water-power company is to build up a new industrial section of the United States in that part of the Mississippi Valley which is usually thought of as being devoted solely to agriculture. The company has 200,000 horse-power available for manufacturing, and experience shows that this will furnish sustenance for a million people.

THE stranger in Keokuk thought that the floor raised several inches under his feet; he was sure that the building trembled in all of its walls; he started out of his chair to make a dash for the street, but was reassured by observing that the family he was visiting paid not the least attention to the disturbance.

"That's only the blasting at the water-power," said his hostess.

The great Keokuk water-power development, which has attracted the attention of the entire world, is set down several feet into the hard, blue limestone bottom of the Mississippi River, which is at the bottom of the trough of the continent. The tail race, a half-mile in length and several hundred feet wide, was excavated twenty-five feet deep into the bottom of the river, and across on the Illinois shore in the city of Hamilton, a mile to the eastward, a large quarry was opened to obtain the rock for the concrete dam itself.

Five tons of gelatine dynamite were exploded at one time in the deepest depths of the American Continent, and this shook the buildings in both towns so much and so often that the people became thoroughly accustomed to the vibrations and paid no more attention to them than to the noise of the passing street cars or the ticking of the family clock. It is a pity that there is not room here to tell how the general foreman of blasting made that five tons of high explosive do exactly what he desired and throw thousands of tons of bedrock exactly eighteen feet into the air, to fall back broken into fragments.

In the construction of this monumental work, which is considered to be one of the great world-feats in engineering, there were a thousand and one striking and interesting details like the blasting. Thirty-

five acres of the bottom of the Mississippi River were fenced off by a great timber and stone wall which withstood the utmost attacks of the mighty river through two spring-tides of ice and flood. The joining of this great cofferdam and the smaller cofferdam in which the dam was built developed a struggle, before the Mississippi in its mightiest mood was throttled, that made one remember the titanic fight chronicled by old Homer. Fourteen miles of railroad adjoining the lake above the dam were relocated, rebuilt and elevated about forty feet.

It has been a wonderful thing to see there in the Mississippi, a picture made up of hundreds of remarkable details, and a composite whole that has excited the wonder and admiration of all classes of people, from the greatest engineers in the world to the tourist sightseer. Nearly every government of Europe has sent its leading engineers to study the Mississippi River water-power in the making; economists, publicists and journalists from all over Europe, from South America and from Japan, have made the long trip to Keokuk to see the remarkable achievement there in the great river where the three States of Iowa, Illinois and Missouri join. Governors, legislators and editors have alternated with great singers, authors and artists in visiting the works in the river two miles in extent and during construction resembling huge concrete buttes.

The engineering involved in the construction of this great water-power development and navigation improvement requires a book for its description. Although full of technical matters and mathematics and physics, it contains many things interesting to the layman. The impossible has been done several

times there at Keokuk, and tourist visitors as well as eminent engineers realize and appreciate what a monument it is for its creator, Hugh L. Cooper, M. A. S. C. E., in whose honor the War Department has named the waters above the dam Lake Cooper.

This lake has an area of a hundred square miles and is sixty-five miles long, with a width of from a mile and a half to three miles and a half. It makes a channel which is eight feet deep for sixty-five miles up the river, and for many miles above the dam is between twenty and fifty feet deep. Boats pass the dam through one lock with the same width—110 feet—as those at Panama, and a lift of forty feet as compared with the lift of twenty-eight feet four inches in each of the Panama locks, except that

at Pedro Miguel, where the lift is thirty-two feet. The lower gates of the Keokuk lock are a foot longer than those at Panama, and are ten feet thick as compared with the thickness of six feet at Panama.

The upper gate at Keokuk is unique, an entirely new invention on a new basic principle; it sinks to the bottom of the river to allow boats to pass over it, and then rises to close the upper end of the lock. It is moved entirely by its own buoyancy by means of an air-tight chamber which is filled with water to cause it to sink, and filled with air to



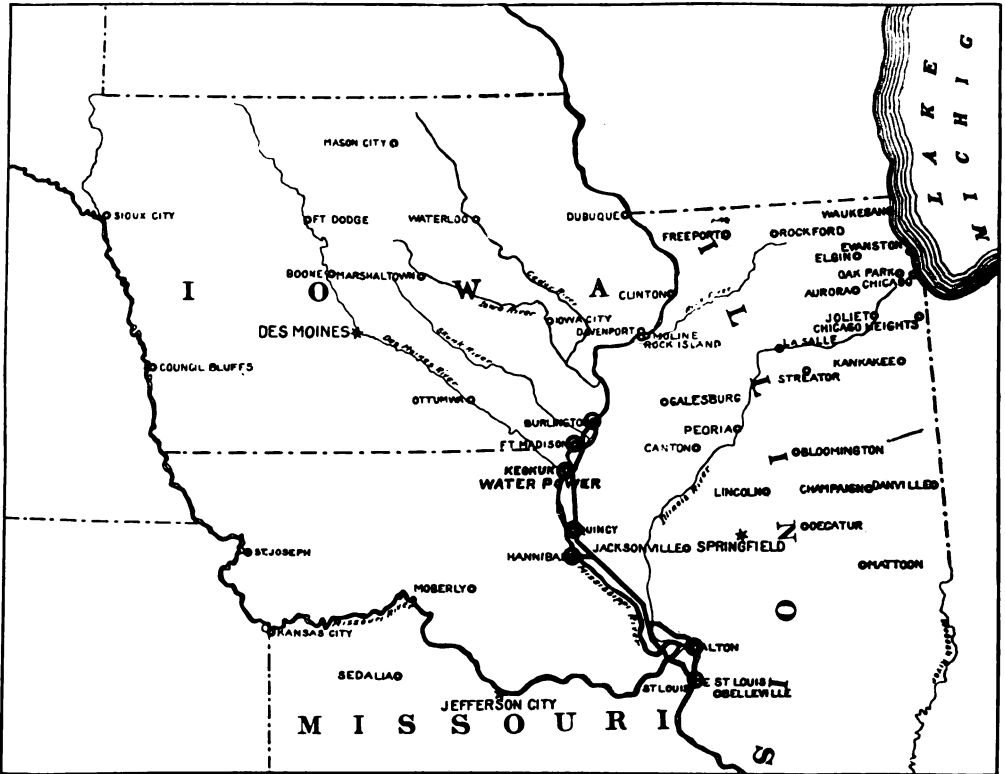
© 1913. H. M. Anschutz, Keokuk

HUGH L. COOPER
CHIEF ENGINEER OF THE KEOKUK DAM

cause it to rise. It requires two minutes to close the lower gates, eleven minutes to fill the lock chamber with water, and forty-five seconds to open the upper gate, thus making the total time of operation about fourteen minutes, now when the men have not become accustomed to it; it is hoped to reduce the total time required for locking a boat through to ten or twelve minutes as the men become more used to the work. Steamboat time between Keokuk landing and upper points is lessened over two hours by the substitution of this one lock and Lake Cooper for the old canal and three locks by which boats formerly passed the Des Moines Rapids.

Between the lock and the Iowa shore is located the dry dock. This consists of a basin only slightly less in cubic

capacity than the one in the Brooklyn Navy Yard, and a large plaza for the machine shops. This required a fill of 200,000 cubic yards of earth besides the building of the large concrete basin. The earth hauled in railway cars to make the plaza of the dry dock, if loaded on wagons in the usual way for hauling, would make a procession reaching from Keokuk to the far corner of Maine or off the tip of the Florida peninsula. This dry dock will give the Government a plant for building and repairing boats entirely adequate for the entire Mississippi River, even though its traffic becomes equal to that of the Danube.



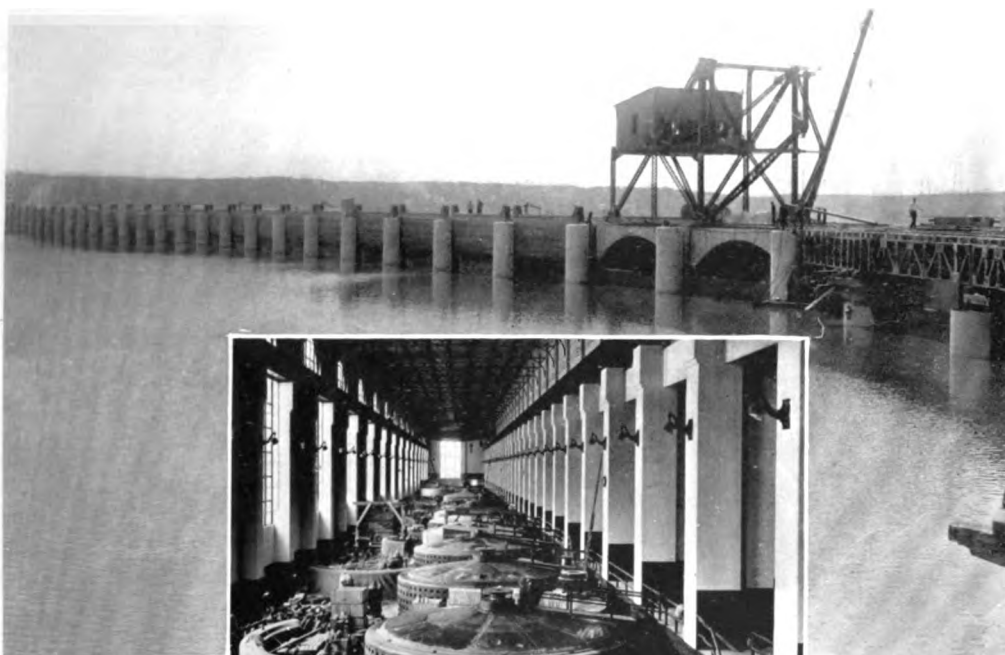
WHERE THE NEW INDUSTRIAL REGION LIES

THE TERRITORY OVER WHICH POWER IS DISTRIBUTED EXTENDS ALONG THE MISSISSIPPI RIVER FROM BURLINGTON, IOWA, TO ST. LOUIS. THIS COLOSSUS OF WATER POWERS WILL FURNISH SUSTENANCE FOR A MILLION PEOPLE.

The colossal Keokuk lock and dry dock, with power for their perpetual operation, become the property of the United States at once on completion entirely at the cost of the water-power company. These and eight feet of water for navigation for sixty-five miles are only the most striking parts of numerous benefits that the United States obtains as toll for allowing the Mississippi to be dammed there where the three States meet. Every detail of the entire construction work of the water-power company is under the supervision of the Chief of Engineers, United States Army, who in all of it looks forward to the time when the Mississippi shall come into its own and be the great artery of commerce of the nation. This caused the dam to be built of 119 arch spans, in each of which the water flows between the piers over the top of a solid concrete spillway topped by a steel gate. By opening and closing a variable number of these gates, the flow of water over the dam is regulated. The requirements

are that a quantity somewhat in excess of the flowage at low water shall always be permitted passage through the works, so as not to interfere with natural navigation conditions below.

But after all, all this engineering, record-breaking in size, remarkable in efficiency and costing about \$25,000,000, is but the means to an end. The real objective of the water-power company is to build up a new industrial section of the United States in that part of the Mississippi Valley which is usually thought of as being devoted solely to agriculture. The company has 200,000 horse-power available for manufacturing, and experience shows that this will furnish sustenance for a million people. This tremendous industrial force is located in the very center of the populous, consuming Mississippi Valley—in the center of the great garden of the nation. The transmission lines run to St. Louis, a distance of one hundred and fifty miles to the south, and to Burlington, Iowa, forty miles to the north. Besides Keokuk, Iowa,



TOP OF THE KEOKUK DAM, WHICH MAKES A LAKE 65 MILES LONG IN THE MISSISSIPPI.

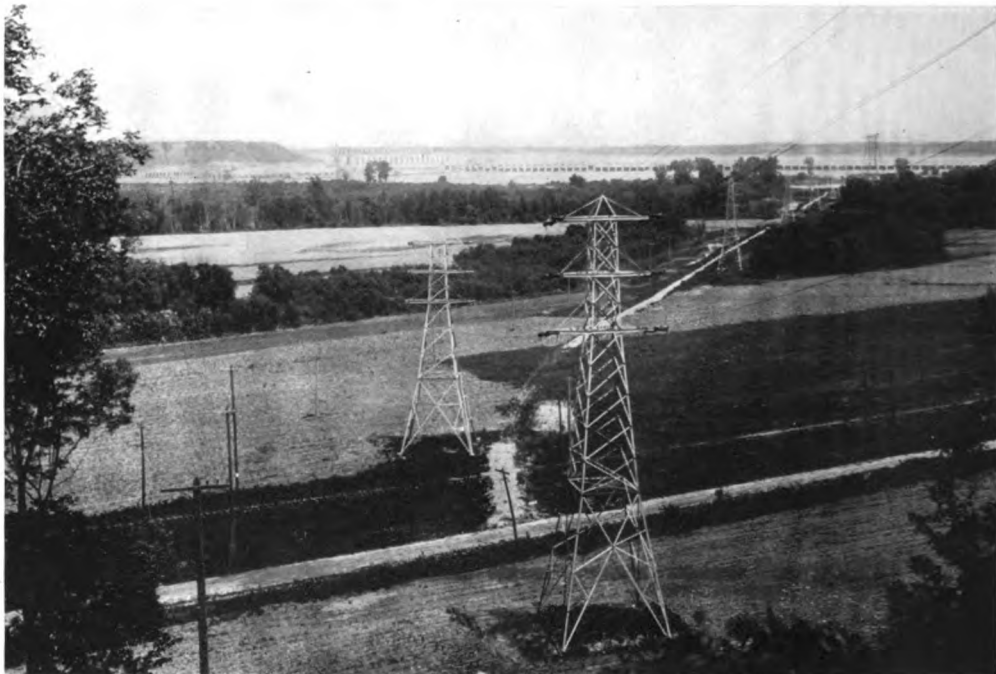


PART OF GENERATOR FLOOR. EACH ELECTRIC GENERATOR IS 31 FEET IN DIAMETER.



Photos by H. M. Anschutz, Keokuk

GENERAL VIEW, LOOKING FROM THE IOWA SHORE, OF THE WORKS OF THE MISSISSIPPI RIVER POWER COMPANY AT KEOKUK, SHOWING SITE FOR DRY-DOCK (IN FOREGROUND), BOAT LOCK, POWER HOUSE AND DAM.



H. M. Anschutz, Keokuk

THE LINE WHICH CARRIES THE CURRENT

THE TRANSMISSION LINE FROM THE KEOKUK POWER HOUSE TO ST. LOUIS CONSISTS OF SIX COPPER CABLES, EACH FIVE-EIGHTHS OF AN INCH IN DIAMETER, CARRYING A CURRENT OF 110,000 VOLTS.

and Hamilton, Illinois, at opposite ends of the dam, they enter the cities of Burlington and Fort Madison, Iowa; Quincy, Alton and East St. Louis, Illinois, and Hannibal and St. Louis, Missouri; a number of smaller towns are also in the power zone.

To bring into this territory manufacturing industries sufficient to consume 200,000 horse-power of electric current is the program of the Mississippi River Power Company, proprietor of the works in the river at the foot of the Des Moines Rapids. It is not expected that this sort of industrial empire building may be done over night; and if it is completed in ten years it will be within the time schedule of the company's plans. The policy of the company is not merely to build a spider web of transmission lines to sell its power; it is to build up the entire power zone on a basis that shall be permanent, so that when the work of creating that new industrial section is done it shall be complete for all time. All the cities involved are putting their houses in order so as to make themselves attractive to the manufacturer from every point of

view. The factories locating in any of them on a permanent basis will increase the importance of the municipality in every way, and thus gradually the entire power zone will be built up with manufacturers, permanent population, traffic and every phase of commercial and industrial activity.

One of the many improvements already visible in the power zone along the Mississippi is the revival of interest in river-front docks. The people there now understand that underlying the problem of transportation on the Mississippi is the solution of the matter of terminal facilities. During the last year there has been a very marked advance in public sentiment and public knowledge about modern dock facilities which enable freight to be transferred from railroad car to boat and from boat to railroad at a minimum cost. While no modern docks have been built as yet, several of the cities have plans well advanced for the building of excellent river traffic terminals within the next few years.

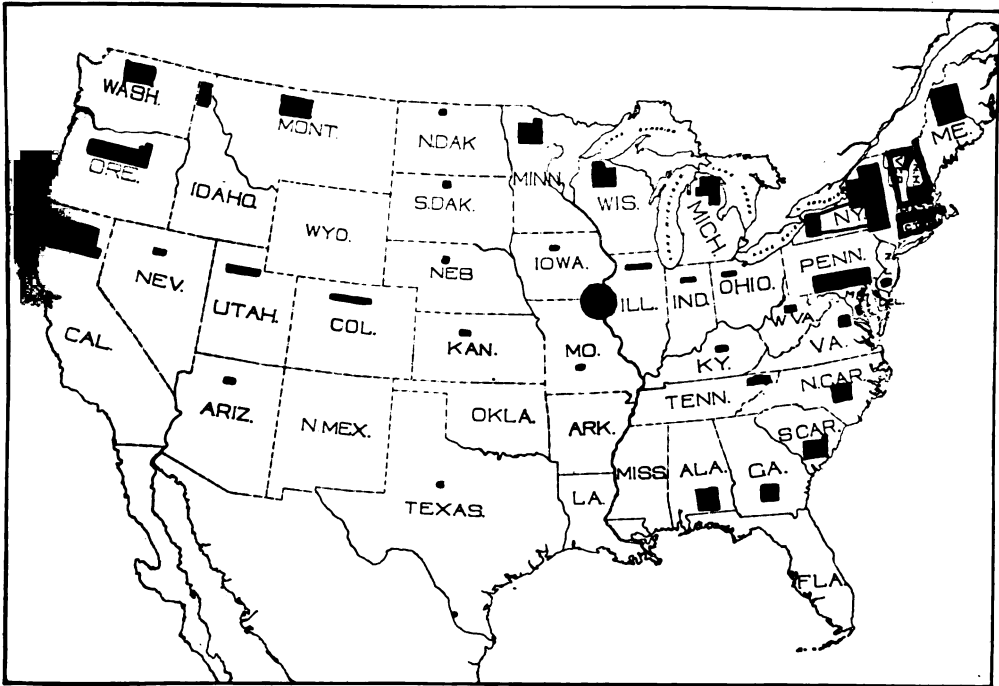
This is only one of many very important indirect results of the building of the great

water-power at Keokuk. Throughout the power zone there is a genuine interest in the relation of the Panama Canal to Mississippi River traffic, and expectations in this direction are sanguine enough to justify the belief that in no section of the United States are the people more alive to the importance of the Panama Canal than are those of the Mississippi River power zone. They believe that their territory is to become one of this country's most important industrial sections.

The history of economics tells us that

tion of the Keokuk water-power is with that cheap coal; and, aside from the common sense of the Mississippi River Power Company, this insures low rates for electric power throughout the new power zone.

The stranger in Keokuk who was shocked by the blasting in the bottom of the river and amazed at the slight attention given to it by his hostess, was also surprised by the attitude of the general public toward the water-power company. He found all classes of people talking and



DEVELOPMENT OF WATER-POWER IN THE UNITED STATES

THE KEOKUK WATER-POWER, WHICH LIES IN THE HEART OF THE MISSISSIPPI VALLEY, IS GREATER THAN THE TOTAL POWER NOW DEVELOPED IN ANY STATE EXCEPT MAINE, NEW YORK AND CALIFORNIA.

in the older European countries manufacturing has always finally moved into the fertile valleys; the Keokuk water-power is in the very center of agriculture of the United States, a region capable of producing food for millions of workmen in the broad, rich fields close to the factory walls.

Another important factor in the unprecedented industrial development which seems certain to take place is the fact that the Keokuk dam lies in the midst of the great coal field of the Middle West. There is an immense quantity of coal, and the cheapest price for coal to be found anywhere in the country. The real competi-

acting the sentiment that the Mississippi River Power Company is always right, and whatever inconveniences it causes, by blasting and the like, are necessary for the greater good it is accomplishing. Indeed, practically all the citizens seem to consider that they have as much proprietary interest in the water-power development as the stockholders of the company. There are two reasons for this: the great work there in the river is really a result of an entire community working persistently for many years with a single aim.

The people and the municipalities worked strenuously for years and spent



H. M. Anschutz, Keokuk

THE LOCK IN THE KEOKUK DAM

THIS LOCK HAS THE SAME WIDTH, 110 FEET, AS THOSE AT PANAMA, AND A LIFT OF 40 FEET, WHICH IS HIGHER THAN THAT OF ANY ONE LOCK AT THE ISTHMUS.

considerable money trying to secure the development of the water-power going to waste at their front doors. A little formal corporation was formed to act as trustee for the people, and this obtained the necessary franchise legislation from Congress. For years it was unable to induce capital to risk \$25,000,000 on the proposition, but at last the Mississippi River Power Company was organized for the big work sketched in broad lines above. This is really a water-power development coming directly out of the masses of the people, and they feel that it is theirs with the same feeling of ownership that they have in the White House at Washington. The entire construction work is such an interlocking of power development and improvement to navigation that it really is difficult to separate the corporation part from the governmental part, and the Government and the company are actually working in quasi partnership.

This public feeling has been fostered by the attitude of the Mississippi River Power Company from the beginning. It

overflowed the land of 818 different farmers—and settled with all but six of them on amicable terms; the scant half-dozen who compelled condemnation proceedings did not receive from the jury quite so much money as the company had offered them in the beginning. In lieu of about \$5,000 worth of bad roads flooded by the lake above the dam, the company has built \$175,000 worth of modern automobile boulevard along the lake shore.

In a recent address, an executive of the company said that the Mississippi River Power Company, starting new, is starting right, recognizing that it is in the second decade of the twentieth century with its new ideas, and that it proposes to avoid antagonism by always keeping in harmony with the best, collective, general public sentiment of the times. That these statements were more than mere persiflage is made perfectly evident by the company's actions, which speak louder than many words, and which by this time have made almost every possible contact with public relations.

THE CITY OF MARYSVILLE

By G. W. HARVEY

SO extensive are the waterways of the continental United States, that unless specifically mentioned, one is very liable to overlook the importance of some particular river or group of rivers belonging to one general system, and yet the Sacramento River with its tributaries ranks fifth among the rivers of the United States in traffic. The average value of the commerce carried by the Sacramento and Feather River boats during the year 1911 exceeded \$65 a ton, and the total value was approximately \$32,000,000.

IT is not alone in the seaports of the world that the opening of the Panama Canal is eagerly awaited. That great event is anticipated by many places which are miles away from tidewater, and among these is Marysville, a city which lies not far from the center of the northern half of California, in the heart of the great Sacramento Valley. For Marysville is at the head of navigation on the Feather River, and through that stream and the Sacramento, into which it flows, has a water highway to San Francisco. When the great canal is opened Marysville will have a short cut to New York and Washington, or to Liverpool and Hamburg, and is looking forward to the time when ocean vessels may bring their cargoes directly to her wharves.



Seron, Marysville

The Sacramento Valley is an empire of untold wealth. It is rich in lands and mines and has ideal conditions for the pursuit of agriculture, horticulture, viticulture, dairying and the countless other industries which go to make up the life of the people and add to the sum of human progress. But, as yet, it is sparsely populated and has room for millions of people.

One journeys northward but an hour from Sacramento, on the main trunk line of the Southern Pacific or Western Pacific Railroad, or on the cars of the Northern Electric Railway, to reach Marysville, the county seat of Yuba County, separated only by the Feather River from Yuba City, the county seat of Sutter County. These two county seats, which really comprise one city with a combined population

of nearly 15,000, are located but a little more than a hundred miles in an air line northeast of San Francisco. They are situated at the junction of the Yuba and Feather Rivers and are protected from the freshets and floods of these rivers by seven miles of levees which are conceded to be the finest and strongest in America. They were built in 1875 at a cost of a million dollars and have never had a break.

So extensive are the waterways of the continental United States that, unless specifically mentioned, one is very liable to overlook the importance of some particular river or group of rivers belonging to one general system, and yet the Sacramento River with its tributaries ranks fifth among the rivers of the United States in traffic. The cargo carried by the Sacramento and Feather River boats, according to the report of the Chief of Engineers for the fiscal year ended June 30, 1912, was 505,282 short tons; during the year ended December 31, 1911, the average value of the commerce carried exceeded \$65 a ton, and the total value was approximately \$32,000,000. From Marysville fresh, dried and canned fruit, vegetables, grain, hay, wool, wood and livestock are shipped in large quantities. More fresh cucumbers are shipped from this city than from any other point in the State.

Although modern and progressive, the "spirit of '49" is still held in Marysville as in no other city in the State. In no story of the early days is it left unmentioned, for it was to Marysville that the picturesque characters of those long gone



THE ALMOND HARVEST

days came to spend their weekly earnings from the chief mining camps of the State, which lay within a radius of 150 miles of the city.

Springing into existence in the early days of the gold excitement, Marysville blossomed forth full grown on the morning of January 18, 1850, Stephen J. Field, then a young lawyer, later Associate Justice of the Supreme Court, being a prime factor in the formation of its city government. Accident played no part in the location of Marysville. Its situation at the head of navigation, which makes it the natural trading



Photos by Henry M. Seron, Marysville

WHEN THE PEACHES ARE RIPE

valley of the Sacramento to the foothill regions of this wonderful country, the very embodiment of that dynamic energy, which has made America—especially western America—famous throughout the world, where there are thousands of acres of orange and olive groves whose golden harvest is ripened and marketable weeks ahead of that of Southern California. Large tracts of land, formerly utilized for cereal production, are now planted to tree or vine, the fruit output of the districts tributary to Marysville being enormous.

The Marysville peaches bring as high as \$60 a ton at the cannery, which employs 400 hands and has an annual output of 2,500,000 cans. There is



Photo by Henry M. Seron, Marysville

A GLIMPSE AT THE LARGEST HOP FIELD IN THE WORLD
THESE IMMENSE HOP FIELDS AND THE THOUSANDS OF ACRES GIVEN OVER TO OR-
CHARDS AND VINEYARDS ARE PROTECTED BY MILES OF LEVEES

also a large packing house, where good prices are paid for Calimyrna figs and Thompson seedless grapes. The latter, which is the horticultural marvel of the century, was originated within four miles of Marysville.

Marysville is the largest city north of Sacramento, and its position at the head of navigation—which gives it terminal rates to all the markets of the world—makes it an important center of trade and industry. It has large wholesale and retail houses, canneries, creameries, flour mills and fruit preserving houses, one of which has 600 employes. The dredger shops employ 250 skilled mechanics and have an annual output valued at \$2,000,000.

public library, donated by John Q. Packard, containing 8,000 volumes, is located in the heart of the city. A well-equipped electric car line runs along the principal streets, crosses the Feather River and connects Marysville with Yuba City in Sutter County. Each of the leading religious denominations is represented.

An efficient Chamber of Commerce, composed of leading citizens, looks after the commercial, industrial and social development of the city. Especial attention is given to the further development of manufacturing, for which the situation is exceptionally favorable. Transportation facilities are abundant, for to the Western Pacific, Southern Pacific and Northern



Photo by Henry M. Seron, Marysville

DRYING THOMPSON SEEDLESS GRAPES

GREAT QUANTITIES OF FRESH, DRIED AND CANNED FRUITS ARE SHIPPED FROM MARYSVILLE. THE THOMPSON SEEDLESS GRAPE, ONE OF THE HORTICULTURAL MARVELS OF THE CENTURY, WAS ORIGINATED WITHIN FOUR MILES OF THE CITY

Marysville is justly proud of her school system. Besides the splendidly equipped, modern high school and grammar school (the former of which is accredited at the State University), the primary school and a fine business college, additional educational advantages are presented by the College of Notre Dame, a school for young ladies conducted by the Sisters of Notre Dame. Two newspapers are issued daily and two journals semi-weekly. A free

Electric Railroads is added the advantage of water transportation by way of the Feather and Sacramento Rivers and San Francisco Bay. Water transportation insures terminal rates, which places Marysville on a par with other coast manufacturing points.

There is a wonderful variety of craft which ply the Sacramento River and its tributaries. There are stern wheel steamboats, flat bottom schooners, the pictur-



DREDGING FOR GOLD NEAR MARYSVILLE

THE DEVELOPMENT OF MODERN METHODS, INCLUDING THE USE OF GIANT DREDGES CAPABLE OF DIGGING UP ENORMOUS QUANTITIES OF SAND AND GRAVEL FROM THE RIVER BEDS, HAS GREATLY INCREASED THE OUTPUT OF GOLD



AN EXCURSION ON THE FEATHER RIVER

THROUGH ITS POSITION AT THE HEAD OF NAVIGATION ON THE FEATHER RIVER, WHICH, IN CONNECTION WITH THE SACRAMENTO, FURNISHES WATER TRANSPORTATION TO SAN FRANCISCO, MARYSVILLE IS GIVEN TERMINAL RATES

esque boats of the Sicilian fishermen, motor boats, houseboats, yachts and the huge dredgers, some of which tear up the river's bed to get the gold that lies amid the sands, and others build the levees that protect the farms and make possible the orchards and vineyards that grow so luxuriantly in this wonderful climate. Climate, like a will-o'-the-wisp, has led travelers in search of comfort or health a

striped bass, and further up the stream in the canyons of the Sierras rainbow trout and other species are very plentiful.

An event for which Marysville is noted is the annual "shad bake." "Shad!?", did I hear you of the Atlantic Coast say? Surely—and shad as fine as you get in your own Potomac, Delaware or Susquehanna, made possible by the Bureau of Fisheries, which began the propagation of



Photo by Henry M. Seron, Marysville

DON'T YOU WISH YOU WERE INVITED?

IF YOU EVER ATE A PLANKED SHAD DINNER, WITH ALL THE PROPER "TRIMMINGS," OUT OF DOORS, THIS PICTURE OF THE ANNUAL SHAD BAKE AT MARYSVILLE WILL MAKE YOU HUNGRY

weary chase over many lands, but had the search of Ponce de Leon been for a climate of perpetual health rather than for a fountain of eternal youth, success would have crowned his efforts if he had persevered to western shores.

The Feather River is a sportsman's paradise. Wild duck and geese hunting in the *tule* lands twenty miles from Marysville furnishes the sport of kings, while right at the door of the city the river teems with many kinds of fish, including black and

shad on the Pacific Coast as far back as 1873, when the first shad fingerlings were put into the Sacramento. And now the shad bake has become an annual event, the "bake" being done in the old Virginia or Maryland way. About the first of June, when the shad are in their prime, the Marysville Sportsman's Club serves a planked shad dinner with all the trimmings, including an out-of-door appetite, under the trees upon the river bank, the guests often numbering two thousand.

THE EFFICIENCY OF THE CYCLECAR

By HARRY A. TARANTOUS

IN motor car circles it is stated, and correctly, that America is two years behind Europe in the matter of motor cars and vehicle construction, and this is well brought out in the approval abroad of the cyclecar, a new type of car for use for both pleasure and commercial purposes. This comparatively recent creation assumes various forms; in fact, such a diversity of opinion exists as to which of them are to be placed in the cyclecar class that the market abroad is already flooded with three- and four-wheeled vehicles, of a wide range of piston displacement, and all are called cyclecars.

America, plagiaristically inclined, and at the same time seeing that the cyclecar would be heralded by the average man in this country as the "ultimate" vehicle, has stirred up the motor-buying public by the introduction of at least a dozen cyclecars. But the definition, as well as many other things, was late in getting to America, and hence the majority of the cars to be seen in their experimental forms here do not comply with the French ideal.

There is a distinct difference between a cyclecar and a small car or miniature automobile. The former has an enormous future, is a new vehicle and fills a new field for a number of reasons to be discussed later. Where criticisms have been directed at the cyclecar—and some journals of prominence have forecast dire things for manufacturers putting out these cars—a reading of the criticisms has disclosed the fact that the tirade was directed at the small car and not the cyclecar, and that the writers of the



THE GRAND PRIX "BEDELIA"
THE CYCLECAR HAS DEMONSTRATED THAT IT POSSESSES ALL THE GOOD POINTS OF THE AUTOMOBILE TOGETHER WITH THE ECONOMY AND FLEXIBILITY OF THE MOTORCYCLE.

criticisms were as far from authority in what they wrote as their idea of a cyclecar was from the truth. All of the criticisms so far have been directed against the movement from the standpoint of ignorance rather than a knowledge of the new vehicle, and those very ones who have decried the small car under the name of cyclecar would be the first to boost if they really knew what a cyclecar was.

To demonstrate the ability of these little cars the cyclecar Grand Prix was held recently in Paris. No American cyclecars were represented, but among the starters was the best Europe could produce in this line. The photographs on these pages show the new type

of vehicle in its various forms and some of the incidents connected with the race. When it is stated that the average speed at this race was 42.8 miles per hour over a course 163 miles long, it can be seen clearly that cyclecars are not mere toys, but cars with a real future. It will be noted from the illustrations that the method of seating the passengers varies, the driver in some instances being in front and in others in the rear.

When the first cyclecar was made by Bourbeau of Paris he very wisely threw away all of motor car practice as too expensive, and aimed by new methods to produce a vehicle which would be cheap and reliable. To be cheap the motor must be small, and, indeed, the car itself as well. However, Bourbeau knew very well that the mere making of an automobile of small size would not decrease manufacturing cost to any degree, as it costs about as much to make a

small car as a big one, except for material which is the smallest part of the cost. He must obtain cheapness through new design.

Bourbeau was familiar with motorcycles and knew of the excellent service given by motorcycle motors, their cheapness of construction, and the thorough reliability and comfort of belt drive. He therefore adopted the motorcycle motor and belt drive as a start.

The use of narrow tread required a few changes otherwise. The riders had to sit tandem and this proved to be as sociable as the crowded side-by-side types produced in England later. The narrow body was built up in stream line form—being familiar with aeronautics—and made the body do also as a frame by having it low and with no doors, so that one got into it from the curb as into a boat from a dock. This saved weight and cost. The body was both body and frame.

The motor the inventor set endwise at the front of the car—a position that has been improved by later makers so as to get better cooling—and from the engine to a countershaft under the front seat ran a chain. From the ends of the countershaft ran two V-belts to pulleys on the rear wheels.

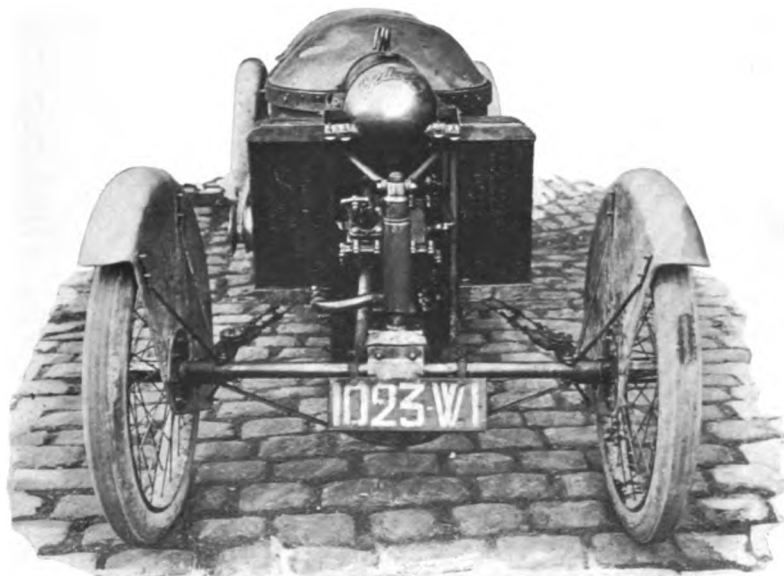
The tread of the car was 36 inches, the body was 24 inches wide, and the length over all about 9 feet. The finish was cheap and looked well. The seats were hammocks of canvas, but extraordinarily comfortable and easy in side sway. The clutch action was had by moving the rear axle forward or back and thus adjusting the belts in tension to hold or run free.

Thus the cyclecar *Bedelia*, which has been described many times, was born, and to date is the ideal of the cyclecar builder for cheapness, simplic-

ity, comfort, and reliability. The only thing hindering the production of the car in enormous quantities is the lack of capital by the inventor, who is proceeding slowly and holding control of his own ideas so far as possible.

When England saw the *Bedelia* it was obsessed to make cyclecars, but wanted to make them "better." Hence water-cooled motors appeared, with three-speed gearboxes, etc., and even worm drive, the cost of an English car being more than that of our small automobiles. They made real toy automobiles and called the cyclecar improved. It is very significant, however, that in a recent reliability run of dozens of cyclecars in England the honors for reliability and speed were captured by cyclecars mostly of home manufacture, rather than by the refined gear-driven small motor cars. To fix a cyclecar on the road if anything does happen is but a moment's work—to fix a car is nearly impossible.

To fix this point in mind the writer would call attention to the experiences of a commercial traveller in England in using a 3½ H. P. cyclecar for his business, doing 5,000 miles in a few weeks, in all weathers, with no real trouble. One can see easily that the performance equals car work on the same roads.



FRONT VIEW OF THE FIRST CYCLECAR, "BEDELIA"

"ALL TO THE GOOD AND A YARD WIDE," IS THE WAY ONE ENTHUSIAST EXPRESSED HIS OPINION OF THIS, THE FIRST CYCLECAR

DISTINCTIVE
TYPES OF
CYCLECARS



THE SECOND PICTURE IS OF THE MORGAN—MCMINNIES DRIVING—THE WINNER OF THE RECENT CYCLECAR RACE IN ENGLAND. THIS IS PERHAPS THE BEST TYPE OF THE ENGLISH CYCLECARS, BUT IT IS MUCH MORE EXPENSIVE THAN THE FRENCH DESIGNS AND LACKS THE FLEXIBILITY OF THE TANDEM SEATING ARRANGEMENT.

THE CENTRAL PICTURE IS OF THE SPHINX GLOBE CYCLECAR WITH V-TYPE MOTOR.



THE TOP PICTURE OF THIS GROUP PRESENTS A SIDE VIEW OF THE "BEDELIA." SEATED AT THE WHEEL IS M. BOURBEAU OF PARIS, WHO GAVE TO THE WORLD THE FIRST SUCCESSFUL CYCLECAR. THIS "BEDELIA" WAS ENTERED IN THE GRAND PRIX RACE. NOTE THE BELT DRIVE AND TANDEM SEATING.



SO SIMPLE IN CONSTRUCTION IS THE CYCLECAR AND SO EASILY IS IT OPERATED THAT THIS TYPE OF CAR PROMISES TO LEND ITSELF ADMIRABLY TO THE USE OF THE FAIR SEX. THE ILLUSTRATION SHOWS THE WOMAN MECHANICIAN WHO ASSISTED DRIVER SAMUELSON IN HIS MARLBOROUGH CYCLECAR DURING THE GRAND PRIX RACES. THE PICTURE AT THE BOTTOM IS OF LOUIS NOEL, AN ENGLISHMAN, SEATED IN FRONT OF THE DRIVER IN THE NOEL CYCLECAR, WHICH HAS BEEN WELL RECEIVED AND WAS DESIGNED BY MR. NOEL.

The automobile of to-day is made to its present size because of the horse. The ghost of the horse-vehicle has haunted the motor car from its beginning and has wished onto it an inheritance of unnecessary encumbrances.

A buggy was built buggy-size because it had to fit the animal hauling it. When motor cars were first made they were horseless carriages, and pretended to be nothing but horse-vehicles driven by motors. Some makers tried to produce small cars, but the buying public had money to buy what it wanted and makers catered to the rich who demanded cars of buggy-size. Thus came the road locomotives, which have been refined and lightened to the present fine motor cars on our streets. The small cars of the early days did not survive for two reasons: first, the buying public with lots of money demanded cars comparing in size with other road vehicles; second, the road conditions demanded buggy-size vehicles.

Since the coming of the motor car roads have bettered 1000 per cent. in most communities, public opinion has changed and there is a large buying public waiting for a car that it can afford, this class being for the most part too poor to keep up the cheapest car, even if they could buy it, and too proud to ride a motorcycle, especially tandem fashion. These folk are numbered by the hundred thousand and could afford a \$350 car with a \$10 a month upkeep, but no more. Can such a car be built, and will it do real work? The demand granted, one may safely leave the rest to commercialism to meet the demand, and while some say it cannot be done, others are doing it.

The small car can now travel as far as the roads go and is only held to low power by wind resistance. With tandem seating a motorcycle motor can meet winds and plough through them so that this difficulty is overcome. But will the narrow tread of the tandem seating type do on country roads? The answer is, it has been done.

There are thousands of miles of fine roads and boulevards leading into and out and about our big cities which are ideal for cyclecars. On these, men in the suburbs can ride to work twelve months in the year, clean, safe and warm. On these, pleasure runs can be had, and as the number of 36-inch cyclecars increases

they will reach into the country a little at a time until roads have their cyclecar ruts as well as car and wagon ruts, and the new vehicle will make its own track. America now has enough fine roads to support 100,000 cyclecars, and more than enough folk without means of travel, other than by street car, who can afford and will buy them.

In America, one of the best examples of simplicity of construction, coupled with easy riding, is to be seen in the I. M. P. cyclecar of Auburn, Indiana. This car was designed by one of the foremost cyclecar men in this country, William B. Stout, and incorporated in it is an entirely new method of spring suspension. With it, the car is capable of attaining a speed of 70 miles per hour on a country road, without so much as jarring the passengers. This may not sound plausible, but the writer witnessed the test, held a few days ago, and the results were really surprising.

The I. M. P. car will sell for \$350, a price which the average corner grocer would not think high for a delivery wagon. The cyclecar may be transformed into a delivery vehicle in a few hours and at a cost of about \$10. With the cost of tires per year being about \$25 and the car being capable of operating from 35 to 65 miles on a gallon of gasoline, there seems no reason why the new type of vehicle should not be as popular in this country as it is in England.

In Indianapolis, Indiana, is another cyclecar called the Economy car, selling for \$425 and having a 36-inch tread. The passengers in this car sit tandem, the driver being in front, as is the case with all American types. Los Angeles is responsible for the California cyclecar, a side-by-side type of vehicle and one which has created quite a stir in the Middle West. Twenty American makers are now in the field. It is expected that within two years there will be at least 150.

The most successful manufacturer of standard automobiles is an American. His output is over 200,000 cars, which pay to his stockholders an annual dividend of over \$10,000,000. The best known maker of cars averaging over \$5,000 has discontinued its business. These facts demonstrate that in the motor car business success is to be had from the masses rather than from any restricted class.

THE DAUNTLESS CITY OF GALVESTON

By WARREN WILLSEY PETERS

THE rehabilitation of Galveston was one of the most heroic accomplishments ever undertaken by a loyal and devoted people. * * * * It began with an entire change of city government. In 1893 the city council was in control of a group of men known as the 'Eleven.' This assortment consisted of one saloon-keeper, one negro politician, one bar-tender, one drayman, two wharf laborers, one journeyman printer, one retail grocer, one curbstome real-estate broker, and one political agent for a paper railroad."

FROM the foam of the Gulf of Mexico, where it laves the coast of Texas, rises Galveston Island, long and narrow, stretching as it seems from the open sea, leviathan-like, motionless upon the heaving waters. At the east end of the island, spreading the full width of it, lies the city of Galveston, the very flower of Texas cities, expanding gloriously among the brilliant blossoms of civilization in that most wonderful garden of the Southwest, like its own oleander, the South Sea Rose.

The genesis of Galveston came in 1837, when the distinguished ornithologist, Audubon, came, saw and settled. The marsh that Audubon saw has been transformed into the beauty spot of the South, the second port in the United States, and the greatest cotton port in the world. The history of Galveston scents of romance and adventure. As early as 1816 the vessels of Lafitte, the Baratarian chieftain, sailed into the bay. Later came the Mexican fleet under Don Jose Manuel Herrera and Don Luis Aury. On September 11, 1816, Aury was made civil and military governor of the Island of Galveston, taking the oath of allegiance to the Republic of Mexico. In 1820 the island became barren of humanity, save for roving tribes of Caronkaway Indians. Under orders from the United States Government, Lafitte burned his village and left.

The city of Galveston was founded in 1836, when Col. M. B. Menard purchased a large tract on the east end of the island from the Government and organized the



Photo by Brown

Galveston City Company. This company named the city after Bernardo de Galvez, the distinguished Spanish soldier and statesman, and in all the old documents the name of the city was spelled Galveston. In the latter part of 1837 Galveston became a port of entry with one wharf. It now ranks second only to New York in the value of foreign exports, and has miles of wharfage accommodating

fleet after fleet of the largest ocean freighters. It takes more than fifty steamship lines to carry the exports of Galveston to the important marts of the world. Being no more the port of Texas than of Oklahoma, New Mexico, Kansas, Arkansas, Colorado, the Dakotas, Minnesota, Iowa and other States, Galveston to-day is fulfilling her mission as the gateway for more than one fourth of the country's area, being served by a network of railroads covering the entire trans-Mississippi territory. The marvelous growth of Galveston is largely attributed to the commission form of government, which was first adopted in this city and has since been adopted by hundreds of others.

The dawn of 1900 saw Galveston growing rapidly. Great things were predicted and plans were laid for a tremendous increase of her already mighty commercial pursuits. In September, 1900, Galveston suffered severely from an unusual atmospheric disturbance, losing nearly half of her citizens through death and desertion. The rehabilitation of Galveston was one of the most heroic accomplishments ever undertaken by a loyal and devoted people. It stands forth to-day in the annals of

municipal heroism. It began with an entire change of city government. In 1893 the city council was in control of a group of men known as the "Eleven." This assortment consisted of one saloon-keeper, one negro politician, one bar-tender, one drayman, two wharf laborers, one journeyman printer, one retail grocer, one retail butcher, one curbstome real-estate broker, and one political agent for a railroad which never existed except on paper.

The whole system was honeycombed by this "Eleven." They fattened openly on the city. The annual budget regularly exceeded the income, producing an annual deficit of \$100,000. Every two years the legislature was asked for authority to issue \$200,000 in floating indebtedness bonds to meet the over-expenditure. As city taxes were not due until October, the city borrowed regularly from \$50,000 to \$100,000 to tide over the summer months. The city treasurer received a salary of but \$100 per annum, but he had the handling of all the city's funds and the city received no interest thereon. The board of aldermen was rotten to the core, and was the cause of the city's greatest trouble.

September 8, 1900, saw the city practically bankrupt. It had defaulted in the payment of interest on its bonded indebtedness. Scrip, salable only at a big discount, was being issued to meet current bills. Public buildings and streets were in a deplorable condition. The auditor's report showed the floating indebtedness of the city on January 1, 1901, to be \$204,974.54. Factional strife, jealousy

and dissension prevailed in the city council. Many disgusted citizens were refusing to pay their taxes; the aldermen and their friends did not do so; then why should anybody else? A grave situation confronted the city. The people realized that in order to restore confidence, and make Galveston a safe place in which to reside, prompt steps looking to the protection of the city against possible danger to life and property from storms and hurricanes were absolutely necessary.

The result of heroic effort on the part of leading citizens, who formed an organization known as the Deep Water Committee, was the adoption of the commission form of government. The fight waged by the crooked element against the adoption of the new form of government is far different from what would be supposed from the foregoing relative to their carelessness in thieving. They fought wonderfully, yet were beaten, and the dawn of hope was seen in Galveston. The city commission is made up of five members—a mayor-president and four commissioners governing particular departments designated as Finance and Revenue, Waterworks and Sewerage, Police and Fire, Streets and Public Property. All power resides in the commission and a majority vote of the body is final. The Mayor is the presiding officer and general director of the affairs of the city, but he has no power beyond his vote as commissioner, except some minor abilities to act in case of emergency. The individual commissioners must also come to the board for all power to act.



UNDAUNTED BY DISASTER, HER CITIZENS VALIANTLY UNDERTOOK AND BRILLIANTLY ACCOMPLISHED THE STUPENDOUS TASK OF PLACING GALVESTON PERMANENTLY ABOVE FLOOD LEVEL. HUGE SUCTION DREDGES CARRIED SAND FILLING INTO THE CITY AND EVERY HOUSE WAS RAISED SO AS TO BE EXACTLY ON THE GROUND WHEN THE FILLING WAS COMPLETED



THE WATER RAN OFF AND THE SAND REMAINED

THE SUCTION DREDGES, OPERATING IN A CANAL 60 FEET WIDE, 10 FEET DEEP AND 4 MILES LONG, PUMPED SAND AND WATER THROUGH THESE IMMENSE FORCE PIPES UNTIL THE SAND REACHED THE POINT OF FILLING

The adoption of the commission form of government resulted in the following:

A board of three eminent engineers was employed and paid to devise plans for the reconstruction of the city.

The emergency at hand was met and dealt with efficiently by the city, acting independently and also jointly with the county and state.

A great seawall was constructed by the city and county; the grade of the entire city was raised, these improvements aggregating in cost about \$4,000,000.

Annual budgets exceeding the city's income gave way to budgets kept strictly within the municipal revenues.

In February, 1902, the bonded indebtedness of the city was \$3,000,000. Since then there has been issued in bonds for permanent improvements, \$2,775,000. In the past ten years, under this commission form of government, \$1,250,000 of this indebtedness has been retired without the issuance of any refunding bonds, and \$1,250,000 has been spent for paving, drainage, repairs to public buildings and additions to the waterworks system, and

the tax rate to-day is far below what it was in 1900.

Numerous other necessary things were accomplished through the adoption of the commission form of government; in fact, so numerous are the accomplishments attained that space and time prohibit their exposition. Suffice it to say that Galveston has taken mighty strides forward until she is far beyond the point of development attained when the disturbance of 1900 was experienced. What pen can describe the havoc wrought by that disturbance? One half of the city lay in ruins and one half of the citizens were gone. The other half undertook the tremendous burden of rehabilitation.

The change of government being effected, the question of guarding against a repetition of the disturbance wrought by the elements was presented. The city opened its eyes to the possibility of construction of the famous seawall. From the eastern end of the island, where the jetties protecting the channel leave the shore, the seawall stretches westward for five miles, protecting the entire city from the Gulf

waters, however turbulent they become. The wall is a monolithic mass built in two sections. A base, sixteen feet wide, was first laid, a concrete superstructure tapering to a width of five feet being laid thereon. The wall towers seventeen feet above mean low tide and is built upon piles and sheet piling to prevent undermining. Its cost is approximated at \$62 per lineal foot. The top of the wall affords a delightful promenade for pedestrians. Behind the wall has been laid the famous boulevard, five miles long and more than one hundred feet in width.

The completion of the seawall marked but the beginning of the tremendous task assumed by the heroic citizens of Galveston. The city lay sheltered by a towering wall. If the waters of the Gulf ever became sufficiently turbulent to wash over the wall, the city would suffer. The only thing to do was to raise the entire city to a level with the wall, thus placing it permanently above flood level. How this was done is the story of one of the most brilliant achievements of all time. A canal was dug behind the seawall for the purpose

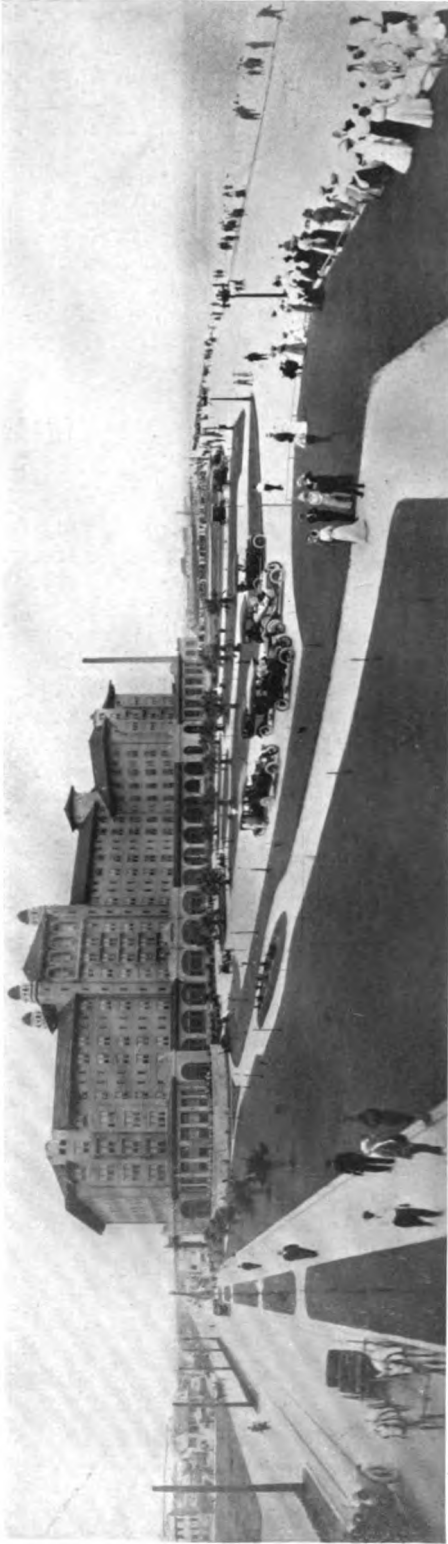
of permitting the large suction dredges to enter the city with the sand filling. From the area through which the canal passed every house was removed. Every landowner leased his property to the city without charge. The canal was sixty feet wide, ten feet deep and four miles long, with a turning basin at the western end. The dredges brought in water and sand to a point along the canal where connection with large force pipes was made. The dredge pumped sand and water through the force pipes to the point of filling. The water ran off, the sand remained.

For a distance of two hundred feet from the seawall a level of seventeen feet was maintained. The filling was gradually sloped toward the bay from this point for drainage purposes. Every house was raised to a height enabling it to rest on the ground without lowering when the filling was completed. All paving was relaid, all sewers renewed, all vegetation replanted and all sidewalks rebuilt throughout the city. People retiring high above the ground awoke to find that the ground had come up to them during the night.



A TYPICAL RESIDENCE STREET IN THE RECONSTRUCTED CITY

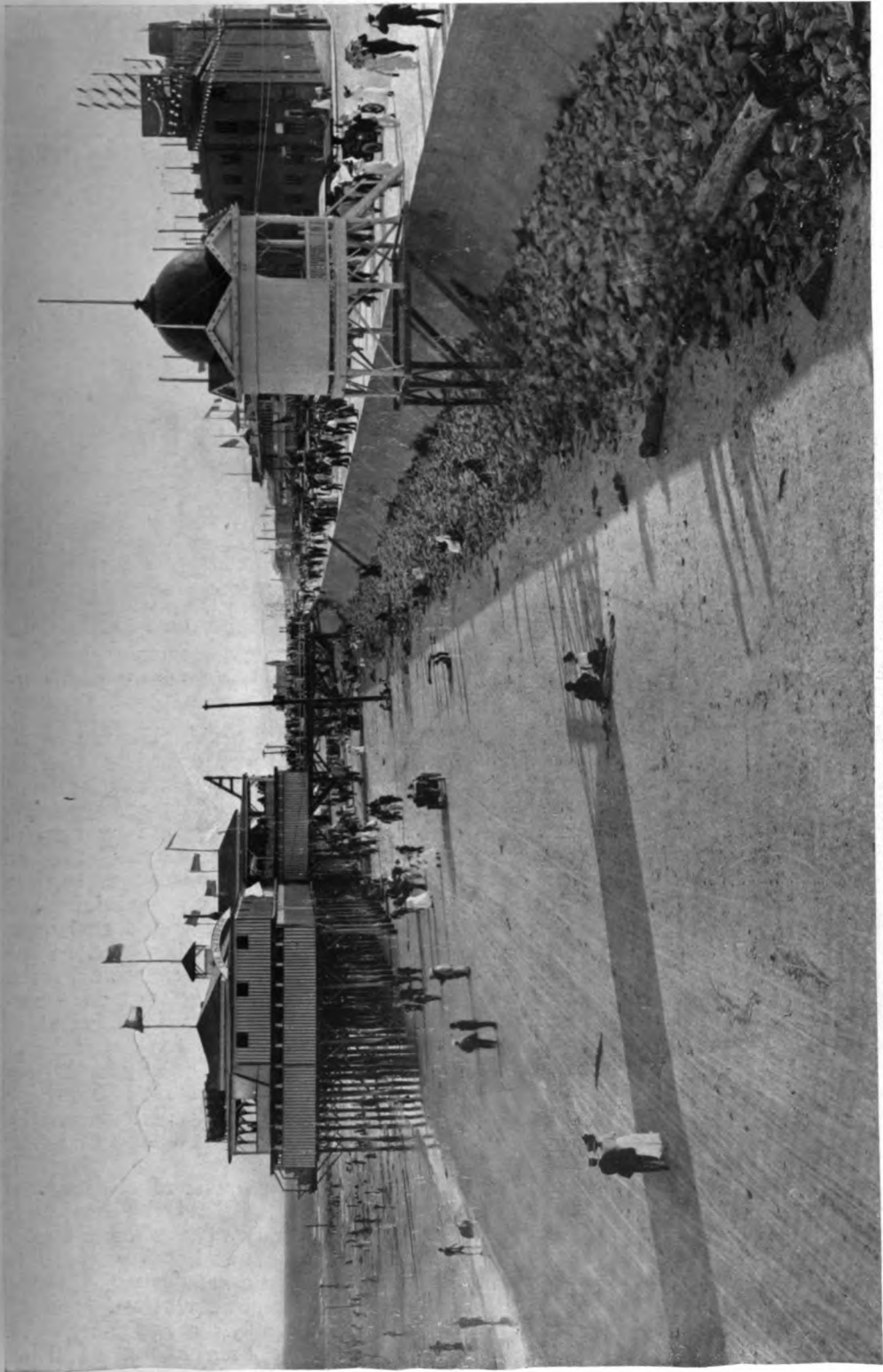
EVERY TREE WAS REPLANTED, ALL THE PAVING RELAID, THE CANAL WAS REFILLED, AND NO TRACE NOW REMAINS OF THE GRADE-RAISING



WHERE ONCE OCEAN-GOING VESSELS ENTERED THE HEART OF THE CITY, THERE NOW STANDS THE BEAUTIFUL HOTEL GALVEZ



THE FIRST TRAIN ACROSS GALVESTON'S CAUSEWAY, HER LATEST GREAT ACHIEVEMENT



GALVESTON'S FAMOUS BEACH AND SEAWALL

"THE SEAWALL PROVED ITS WORTH IN JULY, 1910, WHEN THE PEOPLE STOOD UPON THE WALL AND WATCHED THE WATERS ROLL IN, AS HIGH AS THEY ROLLED IN THE EVENTFUL SEPTEMBER OF 1900."



GALVESTON'S RESIDENTIAL THOROUGHFARES SUGGEST THE TROPICS
 THE EVER VERDANT FOLIAGE OF FERN AND PALM EMBELLISHES THE GALVESTON HOME WITH SURROUNDINGS THAT ARE IDEAL.
 BE THAT HOME A HUT OR PALACE

Pedestrians walked long distances on scaffold walks and all traffic, except street cars, was stopped temporarily on streets affected by the filling. During the entire period of time consumed in the grade-raising there was absolutely no delay to street car traffic. The streets were "shelled" after the grade-raising, the canal was refilled as the work moved eastward and no trace of it now remains. Where once the ocean-going vessels entered the heart of the city there now stands the beautiful Hotel Galvez, built through popular subscriptions by Galvestonians, ranging from \$50,000 to \$100, at a total cost of \$750,000.

But the tremendous undertaking of a noble citizenship had only started. The wonderful bulwark now banked against the Gulf waters enabled everyone to bid farewell to fear; yet there was one thing lacking—an efficient means of egress if sudden egress ever became necessary. For many years the only means of egress had been a wooden structure across Galveston Bay from Virginia Point to the island, seven miles west of the city. This structure served the purposes of eight lines of

railroad as best it could. There was no means of egress for pedestrians or vehicles, other than small and incompetent ferry boats. Two millions of dollars were expended in constructing the wonderful causeway which now connects Galveston Island with the mainland, converting the island into a modern peninsula. The causeway is one of the largest and most substantial structures of its kind in the world. Built of concrete, stone and steel, it represents one of the greatest engineering products ever produced. It provides ample means of egress for people and vehicles of all kinds, and greatly facilitates the handling of Galveston's immense amount of railroad traffic. The causeway was formally opened for traffic in May, 1912.

Situated in a paradise of deep water southeast of the mainland of Texas, Galveston is essentially a city of commercial pursuits. Although its location makes it an ideal place for the manufacture of many products of large consumption, it is to commerce principally that the energies of those who have been instrumental in building up the city have been directed.

Given the geographical location, it remained only for man to provide transportation facilities. Galveston to-day is the Gulf terminus for fifty thousand miles of railroad. Somewhat of the value of Galveston to the trans-Mississippi territory may be best understood when it is stated that the people in this territory are saved annually in freight rates by shipment through Galveston an amount that is conservatively estimated to be not less than \$10,000,000.

From the Panama Canal, Galveston will doubtless reap a harvest of good results. Being the nearest United States port to the canal, with marvelous natural facilities enhanced by Federal improvements aggregating in cost many millions, Galveston bids fair to become the last port for ships bound south for the canal, and the first port for ships bound north from the canal. Within the last two or three years Galveston has secured a growing industry in importation of bananas, nitrate of soda, and many other commodities which hitherto have been imported through other American ports, and all this is attributed to the sterling worth and aggressiveness of a citizenship which never says "Die."

But as marvelous as any other accomplishment is that attained in the beautification of Galveston. Its native oleander lines the streets, converting them into beauty-bordered thoroughfares, the pink

and white blending beautifully. Magnificent palms wave majestically in the perpetual gulf breezes, while magnolias, wisteria, roses and hundreds of other beautiful members of the botanical tribe bloom successively until the city is sweet-scented the year around. Beautiful residences border wide thoroughfares. More than a half hundred public buildings adorn prominent sites. Fort Crockett military reservation is situated at the western end of the city and seawall, and is the scene of the encampment of the Fifth Brigade, Second Division, United States Army.

For thirty miles on either side the island is bordered by a firm white beach upon which the Gulf Stream expends its perpetual caress. Thousands of tourists and visitors from all parts of the world pour into this oleander city, the pride of Texas. Nor is there thought to be any danger of her beauty being marred by the elements. The seawall proved its worth in July, 1910, when people stood upon the wall and watched the waters roll in, as high as they rolled in the eventful September of 1900.

In the annals of municipal heroism there appears no more brilliant page than that which contains the record of this port and playground, which built herself from her own ashes into the greatest cotton port in the world, and the second port in the United States in value of foreign exports.



THE OLEANDER

VIEWS & REVIEWS

IT IS hard to realize that the Panama Canal is so nearly completed that it is now only a matter of days until boats will be able to pass between the Atlantic and the Pacific. The last dike that held the waters of the Pacific back from the Miraflores locks was dynamited a month ago, and a week later the dry excavation in the Culebra Cut was finished—ten days ahead of the time scheduled. An army of men is at work removing steam shovels and other materials and equipment, including 36 miles of railroad track, from the nine miles of canyon-like cut between Gamboa dike and the locks of Pedro Miguel. On the 5th of the present month water from Gatun Lake will be turned into the Culebra Cut through the four 26-inch pipes, extending underneath the dike, which have been used to pump out of the cut the water entering through rainfall and seepage. Five days later the Gamboa dike will be dynamited.

On the 12th of this month it will be 421 years since Columbus discovered America, and 13 days more than 400 years since Balboa first stood on the shores of the Pacific. It is entirely possible that on that day a boat of moderate size may traverse the whole length of the canal; and, unless the slides in the Culebra Cut give an amount of trouble which is not now anticipated, it is highly probable that by December 1 passage can be given to any ship afloat.

THIS is a good time—any time is a good time—to emphasize the fact that, unless and until we supplement the building of the Panama Canal by the development of our harbors and the improvement of our inland waterways, the people of the United States can never secure the greatest possible returns from the enormous expenditure made upon the Isthmian waterway. As conditions are now it will be found that we have built the Panama Canal principally for the benefit of foreign nations.

Some time ago a manufacturer in a western city sent his agents to the growing cities of South America to seek a market for his wares. They came back without a single order—beaten in every instance by the Germans. The reason? Simple enough. The Germans, with their splendid waterways, could get their goods down to the seacoast for 80 cents a ton while it cost the western manufacturer \$4.80 a ton; and on his line of goods that difference of \$4 a ton in freights sent the business to Germany.

In the voluminous report of the British Royal Commission on Canals and Inland Navigation may be found the sworn testimony of a manufacturer in the Midland district whose plant is only 105 miles from London by rail. He declared that he has not only been beaten in the markets of the world, which once he had dominated in his line, but even in the markets of London, the capital of his own country, by manufacturers in the heart of Germany, 500 miles farther away—but with water transportation available all the way.

Supremacy in the commerce of the world will inevitably be attained,

and retained, by the nation which has the cheapest transportation—and the cheapest of all transportation is water transportation.

THE terrible accident which happened on the New York, New Haven & Hartford Railroad on the day that the new president assumed his position has called forth a flood of comment and suggestions, much of which is hasty and ill-considered. The suggestion most frequently made was for the passage of a law providing that all railway passenger equipment should be made of steel. There is no question that the steel car is safer than the wooden car, but it is proper to give due consideration to the time needed to supply the steel equipment and the ability of the railways to meet the financial burden involved. The complete replacement of wooden cars with those made of steel could hardly be accomplished within ten years, if, indeed, it did not take a much longer time. Steel cars, automatic train stops (if such a thing can be found) and every other device which can add to the safety of life and limb ought to be put into service on American railways at the earliest possible moment. But that there is something else to be done is indicated by the fact that there are railroads in the United States on which much the largest proportion of passenger equipment is made of wood but on which not a single passenger has been killed in ten years.

Another indication that something other than provision of steel cars is worth attention is found in the results which have been achieved through the "Safety first" movement on the Chicago & Northwestern Railway. Mr. Ralph C. Richards, who is in charge of that work, writes in the "Railway Record" of August 30: "The result in three years ending June 30, 1913, as compared with three years on the basis of 1910 was as follows: 93 fewer employes killed; 6,433 fewer employes injured; 659 fewer passengers injured; 133 fewer outsiders killed; 157 fewer outsiders injured. This shows what can be done when we all work together for the conservation of human life."

IN AN editorial in its issue of September 19, the "Railway Age Gazette" indicts everybody, from the section hand to the whole nation. Many of the points made are worth consideration by those who desire to know all the facts in order to reach correct conclusions. The editor declares: "To the reflecting mind such accidents as the recent one on the New Haven and the hysterical investigations and discussions of it do not suggest merely the question, What is the matter with American railways? They suggest the much broader and deeper question, What is the matter with the American people? The accident record of the railways of the United States is bad. But it is not the railways alone that are killing people. The factories are killing them. Preventable diseases are killing them. Automobiles are killing them on every city street and country road. * * * Railway accidents in the United States are not, as is so commonly assumed, a disease, but merely a symptom, a manifestation of a disease which is eating like a cancer into American life. That disease is an almost universal carelessness and recklessness of conduct on the part of almost all classes of people, and it is due, first, to a lack of sense of individual responsibility and duty, and second, to a lack of machinery, or of efficient operation of the machinery,

for compelling those who have no adequate sense of responsibility or duty to assume their responsibility and do their duty. * * * *

"Every accident caused by the ignorant, careless or reckless conduct of an employe is an indictment of all his superiors, from those with whom he comes in direct contact up to the chairman of the board and the board of directors, and of each of them individually."

The record of deaths and accidents on the railways of the United States is nothing short of a national disgrace. For the calendar year 1912, no less than 10,952 people were killed and 187,757 were injured, an average of a little more than 30 deaths and 515 injuries during every twenty-four hours throughout the year. It is worth noting that, of the 10,952 people killed, only 393 were passengers, while 3,788 were employes and 5,501, or more than half of the total, were trespassers.

One reason for the vastly smaller number of deaths and injuries on the railways of Europe is due to the fact that trespassers on railway property are promptly arrested and punished; another reason is that when an accident results from the violation of a rule by a railway employe, that employe is also promptly arrested and punished. To quote again from the "Railway Age Gazette":

"Railway financiers, railway officers, railway employes, legislatures, railway commissions, the press and the public, all have their responsibility and duty in connection with railway accidents. Will there ever come a time when not merely a few of them, but all, will awaken to a sense of their real responsibility and begin fully to perform their duty? Until they do the railway accident problem will not be solved."

A LONG with the general resumption of business activity which comes with the cooler weather of the fall, the various waterway associations of the country are completing arrangements for their annual conventions.

Coming First on the list, so far as notices have been received, is the convention of The Lakes-to-The-Gulf Deep Waterway Association which is to meet in Peoria, Illinois, October 12. This Association has for its object the securing of a navigable waterway from Lake Michigan to the Gulf of Mexico via the Chicago Drainage Canal and the Illinois and Mississippi Rivers.

Closely following the adjournment of The Lakes-to-The-Gulf Association will come the assembling of the Upper Mississippi River Improvement Association, which is scheduled to meet in Hannibal, Missouri, on October 15-16. The improvement of the Upper Mississippi from Minneapolis to the mouth of the Missouri River for a channel with a low water depth of six feet has been definitely adopted by Congress, and the work is actively going forward. This Association is one of the most active in the country in urging the provision of adequate water terminals at all river ports.

The Interstate Inland Waterway League will hold its convention on October 17-18 at Orange, Texas. This Association advocates the construction of a protected waterway along the Gulf Coast from the Mississippi to the Rio Grande. The opening of one section, some 200 miles in length, from Galveston to Corpus Christi, was fittingly celebrated in the first-named city on June 12-13-14 last.

The Ohio Valley Improvement Association, which is the oldest waterway organization in the country, will hold its convention in Cairo, Illinois, October 21-22. Congress has definitely authorized the improvement of the

Ohio River for a channel having a minimum depth of nine feet at low water for the entire distance from Pittsburgh to Cairo. The adopted plan involves the construction of 54 locks and movable dams, 12 of which are already completed and in operation; work is progressing on 14 more and sites have been purchased for all the rest.

While not distinctively a waterway organization, the convention of the Southern Commercial Congress, which is to be held in Mobile, Alabama, October 27-29, should be mentioned in this connection because the central theme of discussion is to be the Panama Canal and its relations to the states of the United States, to Latin America and to world commerce. The Pan-American Commercial Conference, under the auspices of the Pan-American Union, has been postponed by the unanimous action of its Board of Governors, and that organization will co-operate in the Mobile convention. Following the convention there will be a cruise to the Panama Canal during which a bronze tablet will be placed in the Canal Zone to commemorate the services of the late Senator John T. Morgan, "The Father of the Canal Idea."

On November 18 the convention of the Atlantic Deeper Waterways Association will meet in Jacksonville, Florida, for a session of four days. On the same date the Mississippi-to-Atlantic Inland Waterway Association will assemble in Palatka, Florida, and, after a session of two days, will adjourn for the purpose of holding a joint session with the convention of the Atlantic Deeper Waterways Association in Jacksonville during the remaining two days of the meeting in that city.

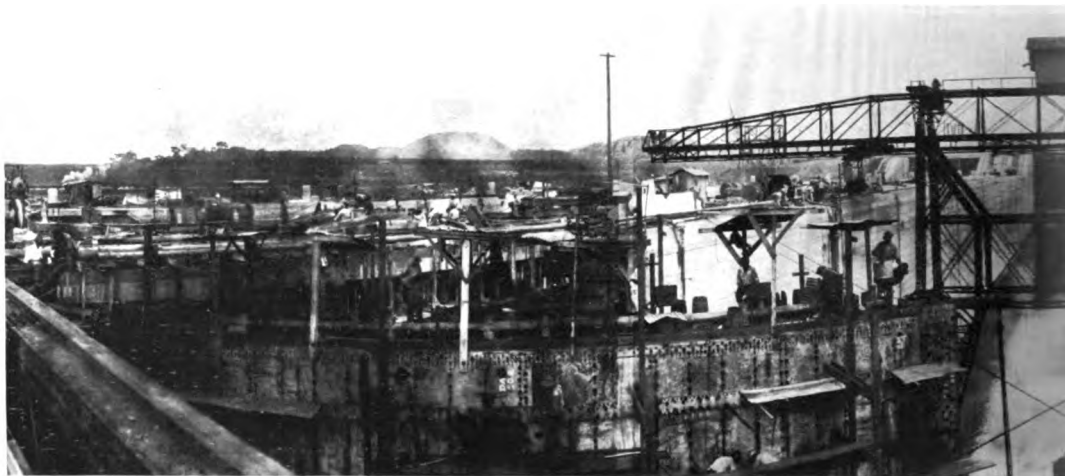
The officers and members of the Atlantic Deeper Waterways Association are naturally greatly gratified over the report recently made by the Army Engineers favoring the construction of canals from Chesapeake Bay to the Delaware River and across the State of New Jersey from the Delaware River to Staten Island Sound. The Chesapeake & Albemarle Canal has been purchased by the Government and is to be given a channel twelve feet deep, and the canal from the North Carolina sounds south to Beaufort, which is already in operation, is to be enlarged so that it will also have a depth of twelve feet.

The Engineers have reported against the present construction of the sections of the proposed waterway from Beaufort south to Key West and have also reported unfavorably on the barge canal across the State of Florida which is part of the project advocated by the Mississippi-to-Atlantic Inland Waterway Association. Sections of the channel proposed by the latter Association along the Gulf of Mexico are under construction, and other sections are authorized.

The tenth convention of the National Rivers and Harbors Congress is to meet in Washington, December 3-4-5. The other organizations which have been named are formed to promote the improvement or construction of individual waterways. The motto of the National Rivers and Harbors Congress is "Not a Project, but a Policy," and its work is to carry on a nation-wide campaign in favor of the systematic, comprehensive and speedy improvement of all the deserving waterways and harbors in the United States. It is expected to have an even stronger list of speakers than have been heard at previous conventions, and it is hoped that the attendance will be larger than ever before.

S. A. THOMPSON.

FINISHING TOUCHES AT PANAMA CANAL



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THE WORK ON THE LOCKS IS FAST NEARING COMPLETION. THIS VERY RECENT PANORAMA



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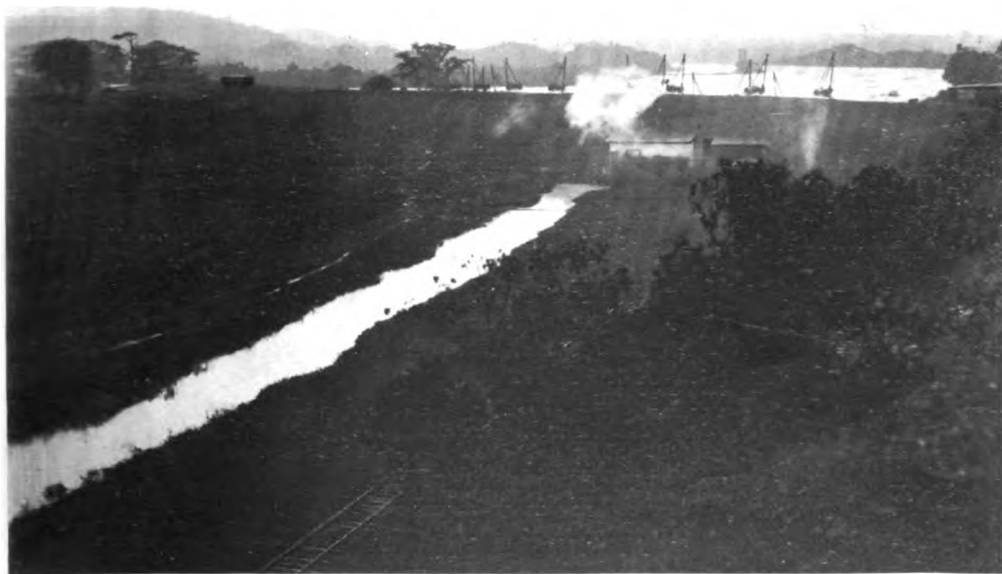
EXPLOSION THAT ADMITTED PACIFIC OCEAN TO CANAL

THIS REMARKABLE PICTURE IS OF THE ACTUAL EXPLOSION, AUGUST 31, THAT REMOVED THE EARTHEN DYKE WHICH HELD BACK THE PACIFIC FROM THE MIRAFLORES. TWENTY TONS OF DYNAMITE WERE USED

OCEANS TO BE UNITED OCTOBER TENTH



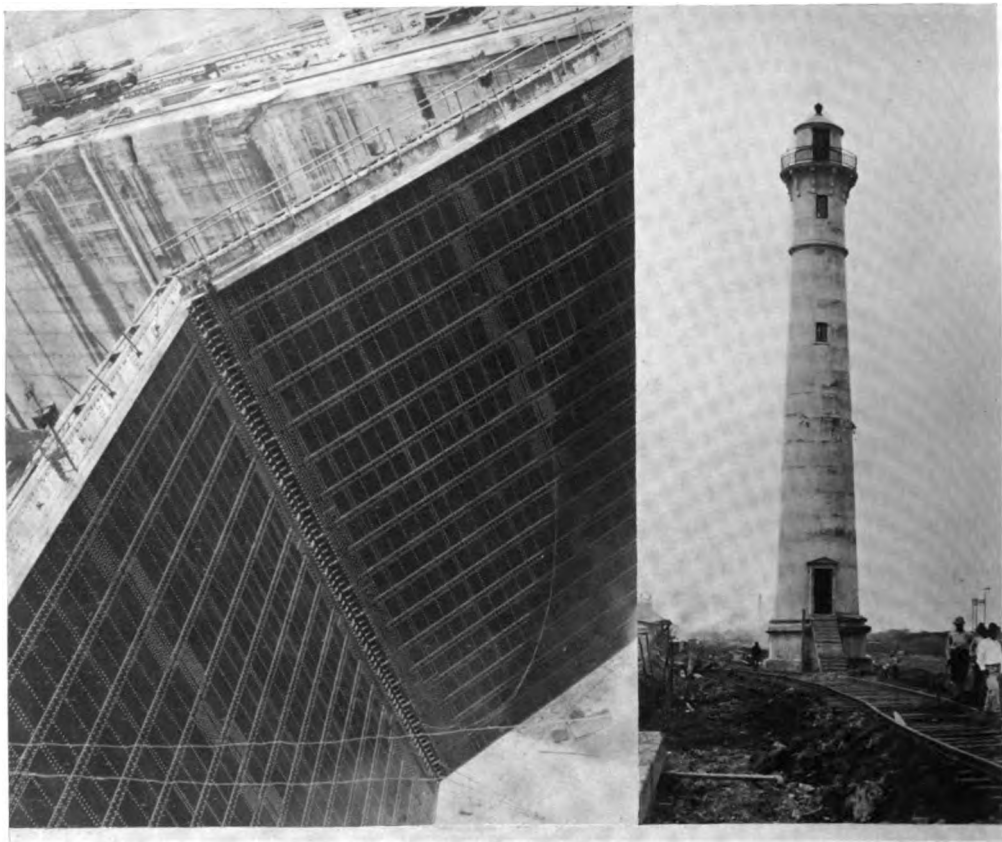
MIRAFLORES LOCKS SHOWS WORKMEN FINISHING THE COLOSSAL TASK AT THAT POINT



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THE LAST BARRIER BETWEEN THE OCEANS

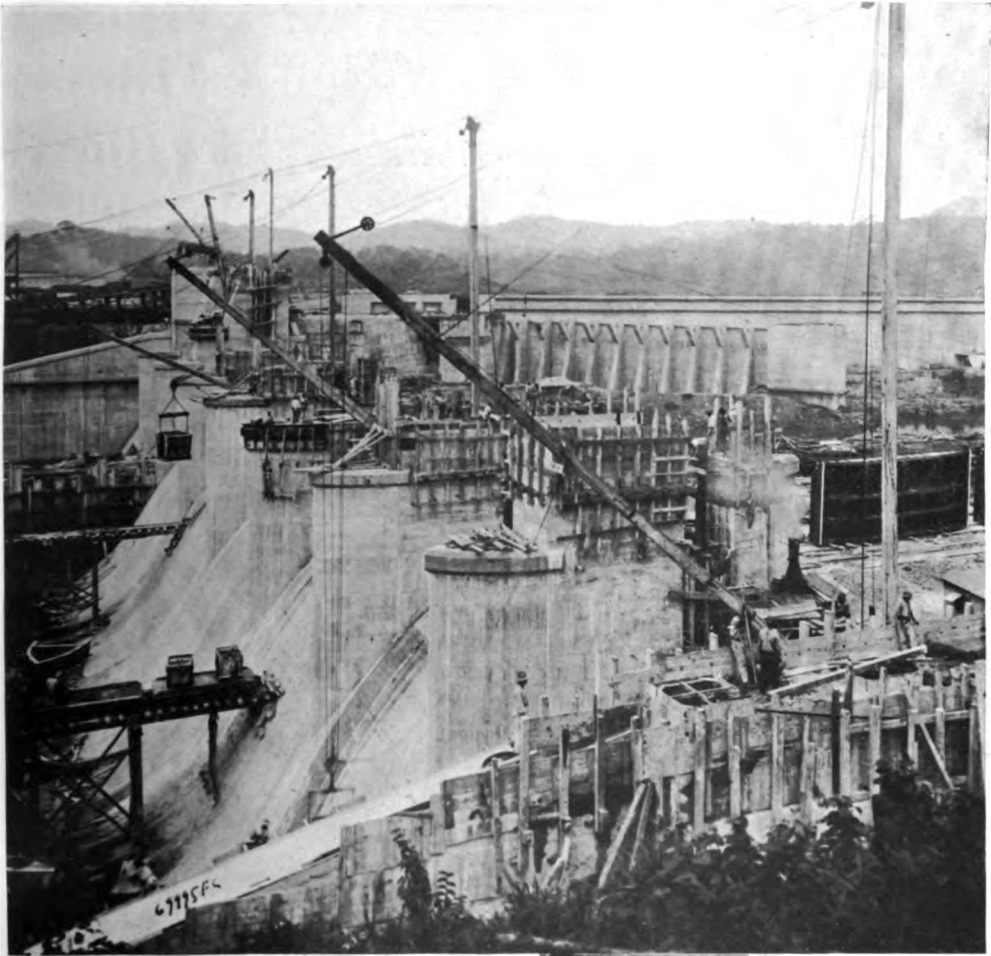
WATER HAS THUS FAR BEEN ADMITTED ON THE ATLANTIC SIDE TO GATUN LAKE AND ON THE PACIFIC SIDE TO MIRAFLORES LOCKS. THE REMOVAL OF THIS GAMBOA DYKE, ON OCTOBER 10, WILL UNITE THE OCEANS



Photos by International News Service

THE UPPER LEFT-HAND PICTURE IS A STRIKING VIEW OF A PAIR OF IMMENSE GATES OF THE MIRAFLORES LOCKS WHICH SHOWS THEIR GREAT HEIGHT. THE CAMERA WAS POINTED ALMOST VERTICALLY DOWN. EACH LEAF OF THESE GATES IS 79 FEET HIGH AND WEIGHS 550 TONS. THE LIGHTHOUSE PICTURE PRESENTS THE REMARKABLE SIGHT OF A LIGHTHOUSE BUILT FAR INLAND AND ON DRY LAND, WAITING FOR THE SEA TO BE BROUGHT TO IT. THE PICTURE OF A PORTION OF CULEBRA CUT DEMONSTRATES VIVIDLY THE PROBLEM OF THE LANDSLIDE. HERE IS SHOWN A RECENT SLIDE THAT BROUGHT DOWN TONS OF MATERIAL. THE LANDSLIDES HAVE COST A GOOD PER CENT. OF THE ORIGINAL CONSTRUCTION WORK OF THE CANAL. THE LOWER PICTURE IS OF MRS. GOETHALS, WIFE OF COLONEL GOETHALS, WHO WILL BE THE FIRST WOMAN TO PASS THROUGH THE CANAL.

Harris & Ewing

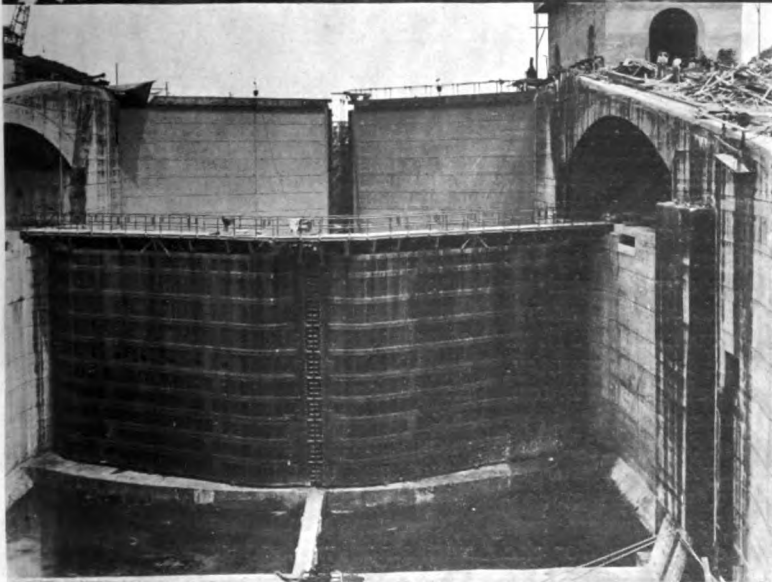


*Underwood &
Underwood*

HERE IS AN UNUSUAL VIEW OF THE GIGANTIC 'PILLWAY' THAT REGULATES THE WATERS OF THE CANAL. THE TREMENDOUS SIZE OF THE STRUCTURE CAN BE REALIZED IF A COMPARISON IS MADE WITH THE FIGURES OF THE WORKMEN.

THE SET OF SAFETY GATES SEEN IN THE FOREGROUND OF THE LOWER PICTURE ILLUSTRATES THEIR USE IN THE EVENT OF THREATENED DANGER TO THE GATES PROPER.

THE SAFETY GATE IS ONLY ONE OF THE MANY DEVICES USED TO PREVENT DISASTER TO THE MACHINERY OF THE CANAL. PRACTICALLY EVERY PART OF THE LOCK CHAMBERS HAS ITS EVER-READY DUPLICATE TO COME BETWEEN IT AND DANGER OR TO TAKE ITS PLACE IN EVENT OF INJURY.



International News Service

IN AND ABOUT WASHINGTON

By EDGAR C. SNYDER

THE Diplomatic Corps, with its prestige and picturesque distinction, is perhaps the most alluring circle to marrying maidens, American and otherwise. When the Spanish legation is raised to an embassy, as it will be before the official season in Washington opens, six of the eleven embassies here will be presided over by native-born American women. Five of these are the wives of the Ambassadors, and the sixth is the daughter-in-law of the Ambassador from Turkey. The doyenne of the Corps, the wife of the dean, who is first in the matter of precedence and "sets the pace" socially, for all the Corps, is an American woman. The dean just now is the French Ambassador, M. Jusserand, who is dean by reason of having the longest service at this post. His wife, the doyenne, was Eliza Richards of Boston, daughter of a wealthy banker who established a banking house in Paris when his children were still young, so that while Mme. Jusserand is an American by birth, she is Parisian by education.

To see the Diplomatic Corps in its greatest splendor, one should be up and looking on New Year's Day, for it is then that the men are the most glittering and imposing in their court costumes and other equally gay apparel. It is the one time when the men far outshine the women. The White House is the mecca towards which all lovers of the spectacular wend their way early in the morning, for the Corps is received in a body by the President, all members accompanied by their wives, daughters, sisters, cousins and their aunts—if they happen to have them and they happen to be in this country. It is the most stately of all occasions, too, and all diplomats whose countries have such formalities as court dress, are obliged to appear in it that day. The women of their parties, of course, wear street costumes. The head of this picturesque and brilliant array is the dean, and, for the first time ever, the wife of a dean is an American, Mme. Jusserand.

The Ambassador was a close friend of former President Roosevelt and was indeed a member of the famous "Tennis Cabinet" of his administration. Mme. Jusserand might easily pass for a French woman, for she is dark, petite, graceful and always dressed with the utmost good taste. Her hair is just beginning to be tinged with gray, but was shining black when she first made her appearance here. She speaks the most perfect French, of course, and is the most charming of hostesses. Under her regime the French embassy has been the scene of a brilliant ball for the White House belle of each season since she came, Alice Roosevelt, now Mrs. Nicholas Longworth, being the first; her young sister Ethel, now Mrs. Richard Derby, was the next, and Helen Taft, the third. And of course there will be at least one of these brilliant events for the daughters of President Wilson. During all her years of social leadership, Mme. Jusserand has held to her strict policy of discouraging Sunday festivities and social functions. She is a devout Roman Catholic.

The other American women in the diplomatic lime-light are the Countess von Bernstorff, wife of the German Ambassador; Mme. Ibrahim Zia Bey, daughter-in-law of the Turkish Ambassador and wife of the second secretary of the embassy; Mme. da Gama, wife of the Brazilian Ambassador; Mme. Bakhmeteff, wife of the Russian Ambassador, and Mme. Riano, wife of the Spanish Minister who is shortly to be made Ambassador. These are here named in their proper order of precedence, and precedence is more to a diplomat than anything else on earth, except food and drink when the drink is not grape juice. There is one thing that a diplomat is sure to be entirely frank about, and that is his preference for real wine over grape juice at dinner.

Countess von Bernstorff, who presides with stateliness and tact over the German embassy, was formerly Jeanne Luckemeyer of New York, who, like Mme.

AMERICAN-BORN WIVES OF FOREIGN DIPLOMATS



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Photo by Aimee Dupont

THE CENTER PICTURE IS OF MME. JUSSERAND, WIFE OF THE FRENCH AMBASSADOR. FROM LEFT TO RIGHT: COUNTESS VON BERNSTORFF, MME. IBRAHIM ZIA BEY, MME. BAKHMETEFF, MME. RIANO, AND MME. DA GAMA, OF THE GERMAN, TURKISH, RUSSIAN, SPANISH AND BRAZILIAN EMBASSIES, IN THE ORDER NAMED

Jusserand, is the daughter of a wealthy banker. She is an impressive, distinguished looking brunette with iron gray hair. She dresses handsomely and in good taste and on proper occasions wears superb jewels.

Mme. Zia, the most youthful of all these American hostesses, was formerly Miss Cary Fellowes of Richmond, Va. She was educated at the National Cathedral School in Washington and met the son of the Turkish Ambassador in Paris after her graduation. It was a short courtship and her bright, happy face is a sure sign of the success of the unusual international marriage. She is very beautiful, a stately, medium blonde with soft light brown hair and large blue eyes.

The wife of the Brazilian Ambassador, who came to Washington just two years ago a bachelor and turned Benedict last December, is the bride of the Corps and will make her first appearance in the kaleidoscopic circle this season. She was Mrs. Arthur Hearn of New York, a woman of great beauty and noted for her exquisite clothes. Unfortunately she has had such ill health ever since the marriage that she was unable to take her place in society until after the close of last season's formal festivities.

Quite the most conspicuous and elaborate of all these hostesses is Mme. Bakhmeteff, who was Mary Beale, daughter of the famous General Beale and sister of the late Mrs. John R. McLean. When she goes forth for visits or shopping or perchance merely for pleasure, there is a pronounced stir in the atmosphere, for Washington, accustomed as it is to all sorts of unusual sights, has never become entirely used to the savage-looking Cossack who is perched beside the coachman or chauffeur, for Mme. Bakhmeteff has both fine horses and splendid autos. She is short and rather plump, and has distinctly russet hair with large brown eyes. The Cossack is a startling figure, some days in brown, other days in green, some times in a mixture of both and at other times in white with brown turban, but always with a savage-looking knife stuck in his belt.

Mme. Riano, who dispenses the hospitality of the Spanish legation, was Miss Alice Ward of this city, and the meeting and courtship of this happy couple took

place here following quickly upon the young lady's debut in the home of her grandmother, Mrs. John Ward. Senor Riano was then first secretary of the Spanish legation and, after many objections on both sides, the marriage finally took place in the Ward home and was a brilliant affair. Mme. Riano is interesting and extremely "smart" in appearance. She is quite a leader in the skating and dancing parties of the young married set.



Harris & Ewing

HISTORIC HOUSES, BUILT BY GEORGE WASHINGTON, TO BE TORN DOWN

LOVERS of historic landmarks in the nation's capital are mourning the destruction of two houses that were built by George Washington. They are being torn down to make way for the new park between the Capitol and the Union Station. The government has condemned and bought all the land and houses on the two squares bounded on the north by C Street, on the east by Delaware Avenue and on the west by New Jersey Avenue, and contractors are now demolishing the buildings standing on this ground.

The Washington houses are on North Capitol Street between B and C Streets. He built them in 1798, and for a time occupied one of them as his home. As late as 1890 the houses in this section were

in the fashionable quarter. Senators and Representatives had their homes there, and in the afternoons and evenings the streets were lined with the carriages of callers, much as Connecticut Avenue, the Avenue of the Presidents and other fashionable thoroughfares now are. At present they are in a most unfashionable quarter and are doomed to demolition, for they stand in the way of modern progress.

Since President Washington built these houses they have been reconstructed and made into one house, new stories have been added and their original architecture entirely destroyed. For many years the new building has been used for hotel purposes, bearing the name of the "Washington Inn." About forty years ago the grade of North Capitol Street at this point was considerably lowered, and supports were put under the old houses of that day, and additional rooms built under the old structures to make them level with the street.

From records now in the possession of descendants of the First President, it appears that the architect of the Washington houses was William Thornton. At

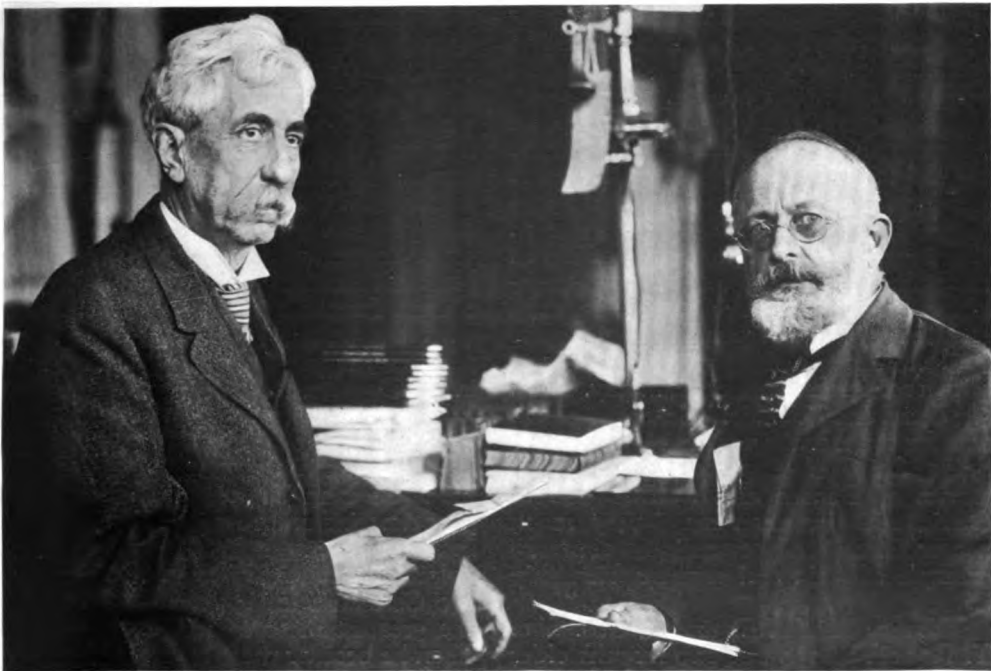
the suggestion of Washington, made in a letter addressed to "William Thornton, Federal City," the houses were patterned after a Philadelphia building which Washington had seen and admired. Washington wrote to the architect:

"I saw a building in Philadelphia of about the same front and elevation that are to be given to my two houses which pleased me. It consisted of two houses united—doors in the center, a pediment in the roof and dormer window on each side of it in front, skylights in the rear.

"If this is not incongruous with rules of architecture, I should be glad to have my two houses executed in this style."

The architects and builders carried out Washington's request, and the structure had two entrances for many years, although many changes were made afterward from time to time. Washington paid \$936 for the lots, and he valued the two houses in his day at \$15,000.

The old landmarks about Washington are disappearing one by one, and while the advancement and beautification of the city are to be applauded, expressions of regret are frequently heard that these quaint old reminders of other days must be sacrificed to the march of progress.



Harris & Ewing

CHIEF OF ENGINEERS WILLIAM H. BIXBY (ON RIGHT) RESIGNS TO HONOR HIS OLD FRIEND, GEN. WILLIAM T. ROSSELL (ON LEFT)

"WHAT is the secret of your life?" asked Mrs. Browning of Charles Kingsley. "Tell me that I may make mine beautiful too." He replied, "I had a friend." Somewhere in her "Middlemarch" George Eliot puts it well—"There are natures in which, if they love us, we are conscious of having a sort of baptism and consecration; they bind us over to rectitude and purity by their pure belief about us, and our sins become the worst kind of sacrilege which tears down the invisible altar of trust."

It is very seriously doubted, if, in these days of selfishness, there has been a more perfect example of sterling friendship than Gen. William H. Bixby, Chief of Engineers of the U. S. Army, showed to his long-time friend Col. William T. Rossell, also of the Engineer Corps, in voluntarily retiring from active army life in order that Colonel Rossell might be promoted to the rank of Brigadier General before his retirement for age on Oct. 11, 1913. General Bixby would not have retired on account of the age limit until Dec. 27, 1913, and, if he had continued in office up to that time, he would have seen his classmate and old-time friend retire with the rank of Colonel. General Bixby could not stand for that and, as he had but six months at most to serve as the head of the Corps of Engineers, President Wilson was asked to honor a distinguished army officer by giving him an additional grade before retirement. And the President, realizing the sacrifice General Bixby was making for a friend of nearly half a century—for they were "plebes" together at West Point, entering the class of '69 at the Military Academy, one from Massachusetts, the other from Alabama—readily acquiesced in the request and on August 11, last, General Bixby gave up his place, with a consequent reduction in pay, to his old friend and "bunkie," General Rossell, who for two months will have the honor of being Chief of Engineers. The heart stories of Damon and Pythias and of David and Jonathan seem very much nearer since this twentieth century example of what real genuine friendship is.

The new Chief of Engineers, Gen. Wm. T. Rossell, who is but two months older than General Bixby, has had a most active career in his chosen profession of

arms. He has seen service upon many of the rivers of the country and has been a potential force in the improvement of many of our harbors. From 1889 to 1893 General Rossell was stationed in Washington as assistant and as one of the Commissioners of the District of Columbia. From the capital of the country General Rossell went to Willett's Point, now Fort Totten, in command of the Engineers. His first river and harbor work was done in Maine in 1880. He has been stationed in Jacksonville, Memphis, Mobile, Cincinnati, New York and other cities. He was for a number of years a member of the Mississippi River Commission, having resigned that position very recently.

The picture shows General Bixby and General Rossell in the War Department, where General Bixby is turning over the affairs of his office to his old friend and successor.

WHEN Secretary Houston of the Department of Agriculture accelerated the resignation of Chief Willis Moore from the Weather Bureau, because of the latter's herculean efforts to land the place for himself, and cast about for a person to fill the position of chief of the weather service, he at once selected Charles Frederick Marvin as the man most universally equipped for the big job. Up to a short time ago Marvin's name was absolutely unknown to the vast majority of our ninety odd millions of people. Yet it so happened that he was better known in the scientific circles of Europe than in his home country, and when Secretary Houston called upon the National Academy of Science to suggest a man for the place, the academicians with one voice replied "Marvin is the man for the position." And Marvin was in the Department all the time.

Who is Charles Frederick Marvin, the new head of the Weather Bureau? In the first place he is a real simon-pure genius. He is the man who runs a tape measure over the wind and puts impalpable vapors in the scales and holds his thumb on the palpitating pulse of the earth. Eight years ago German scientists recognized him as the greatest meteorologist in the world. Then he became the greatest seismologist and earthquakes began asking questions as to their symptoms.

Nearly thirty years ago he entered the government employ through the civil service route, being the first high grade man to take a civil service examination. Shortly thereafter he was made chief of the instrument division of the Weather

Twenty years ago Marvin did the first scientific kite flying, and then he invented the meteorograph, which brought back every item of information about conditions in the upper air. It was kite-flying that gave the first authentic data to the



Harris & Ewing

CHARLES FREDERICK MARVIN
THE NEW HEAD OF THE WEATHER BUREAU

Bureau, and as he had had a thorough training in mechanical science at the Ohio State University he at once began perfecting the instruments of the bureau, and it can be said with truth he has either invented or improved them all.

And between times he has written, written, until countless volumes crowd the shelves of scientific libraries, a mute tribute to the man's tireless activities.

embryonic aeronaut. The experiments that Marvin made with his kites and his meteorograph no doubt played their part in man's successful conquest of the air.

Born in the Buckeye State some fifty-two or fifty-three years ago, Chief Marvin's life has been spent in the quietness of the office where with infinite patience and profound research he has added largely to the sum of human knowledge.



Photos by Underwood & Underwood

FROM FROCK COATS TO OVERALLS

MISSOURI SHOWS HOW TO BUILD A HIGHWAY HUNDREDS OF MILES IN LENGTH IN TWO DAYS. THE UPPER PICTURE SHOWS A DETACHMENT OF THE 250,000 OF ALL CONDITIONS AND CLASSES OF MEN WHO RESPONDED TO GOVERNOR MAJOR'S CALL FOR TWO DAYS' SERVICE IN ROAD BUILDING. THE LOWER PICTURE IS THAT OF GOVERNOR MAJOR (ON THE LEFT) AND HIS NEIGHBOR, GOVERNOR HOODGES OF KANSAS, SETTING A GOOD EXAMPLE IN CO-OPERATIVE ROAD BUILDING

THE HARMSWORTH TROPHY—1913

ENGLAND WINS WITH "MAPLE LEAF IV." THIS IS THE SAME BOAT THAT LAST YEAR WRESTED THE TROPHY FROM THE UNITED STATES. HER AVERAGE RACING SPEED WAS 50 MILES PER HOUR

By C. F. CHAPMAN

THE motor boating racing season for 1913 practically closed with international competition for the Harmsworth Trophy near Cowes, England, on September 10, 11, and 12. The supremacy again goes to an English boat, in fact the same boat, *Maple Leaf IV*, which carried the trophy across the seas a year ago by winning it at Huntington, L. I., after two American boats, *Baby Reliance II* and *Ankle Deep*, had gone down and out just before the finish line was reached in the last and decisive race.

But the performance this year of *Maple Leaf IV* leaves no reason for doubt that she is the fastest motor boat afloat, for on three successive days she decisively defeated both American challengers, *Ankle Deep* and *Disturber III*, in such a manner that they hardly appeared in the same class with the leader.

The contest this year was given even greater interest than ever before by the appearance of a French team, for the first time in many years, and the two boats which they entered, *Despujols I* and *Despujols II*, were by no means inferior productions. In fact on the first day *Despujols II* won the race and it looked for a time, at least, that the trophy would go to France, but on the second day, when *Maple Leaf IV* and *Despujols* were having a neck-and-neck race for the greater part of the 32-mile race, an unfortunate accident befell the latter, putting her out of the rest of the series.

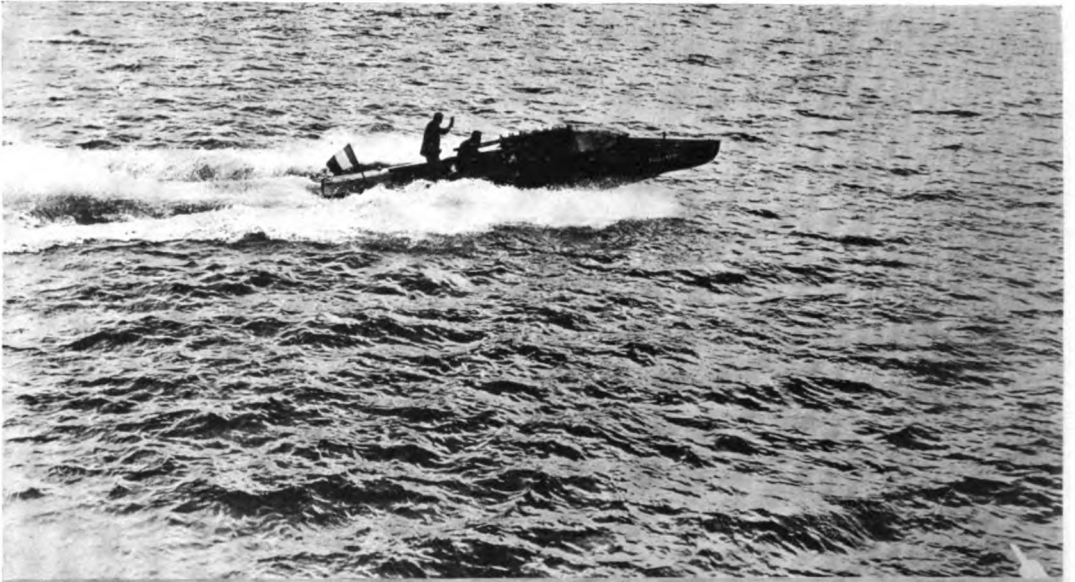
The speeds made were remarkable, each being world's records for motor boats for all distances other than mile dashes. *Maple Leaf IV* averaged practically 50 miles an hour throughout the series, hardly varying a quarter of a mile, one round to the next. *Ankle Deep* and *Disturber III* had many interesting brushes between themselves, as they were very evenly matched, and first one took the

lead and then the other, but *Ankle Deep* had the distinction of being the first American boat to finish on each of the three days.

Unfortunately press reports gave out the speeds in nautical miles per hour, stating that the course was laid out in sea miles, which obviously is an error, or else *Ankle Deep's* speed, for example, would be practically 55 miles per hour, or about 8 or 9 miles faster than she has ever done before. As she is an old boat and has performed very consistently in many races for two years, it seems reasonable to doubt the reports of such phenomenal speeds.

The other French boat, *Despujols I*, and the other English entrant, *Crusader I*, were not in the running from the start, finishing behind the American boats each time. Everything considered, America had the best balanced team, and had *Maple Leaf IV* developed a sign of trouble, the cup would have been on its way home at present. But none developed, and America must try again in 1914, this time presumably with a boat originally designed to race against a 40-footer with 750 horse-power, and not challenge with a 32-footer, selected at the last minute and having only 300 horse-power. The handicap was a bit too great, but both the performance of *Ankle Deep* and the sportmanship of her owner, Count Mankowski, are a great credit to this country.

The two French *Despujols* were twin boats, about 26 feet in length, each with one, six-cylinder, 400 horse-power motor of 5-inch bore and 10-inch stroke and owned by M. Coulomb and M. Bouvet, respectively. *Crusader* is a 33-foot Brooke-built Thornycraft hydroplane with a Brooke engine of about 300 H. P., owned by H. Hollingsworth. *Maple Leaf IV*, owned by Mackay Edgar, is a 40-foot,



Photos by International News Service

five-step hydroplane, with twin Austin engines, each of 375 H. P.

Of the American boats—*Ankle Deep* is a 32-foot Crane hydroplane, owned by Count Mankowski, and powered with two, eight-cylinder, 150 H. P. Sterling engines, and *Disturber III* is a 40-foot Fauber hydroplane, owned by Commodore James A. Pugh of Chicago. She is powered with two, twelve-cylinder Van Blerck motors, each capable of developing nearly 300 horse-power.

Of the other important racing events for 1913, there have been many, and while the results and records show a slight increase in speed over 1912, they do not compare especially favorably with the improvement made in 1912 over the year previous. However, aside from speed advances, motor boat racing in general

has improved greatly, and results have been much more satisfactory than those of 1912.

There has been a great increase in the number of fast hydroplanes built, capable of speeds of 40 miles an hour. Almost invariably these have been 20-footers with between 150 and 200 horse-power and of the single step under body. The monoplane has been largely laid aside, as it was found that at these high speeds, the pounding which this type of boat was subject to, even in a slight choppy sea, was enough to fracture the planking of their hulls.

To a very great extent, the owners of the boats have driven them in the races, and have not been content to sit on shore and watch the paid mechanics race their craft. This has led to a much keener rivalry among yachtsmen which has been very stimulating to the sport.

The Great Lakes have been the center of the greatest racing this year, especially at Toledo, Ohio, Chicago and at Buffalo. At Toledo there was two days' racing on the Maumee River in connection with the Perry Centennial Celebration, which was held there the latter part of July. In all

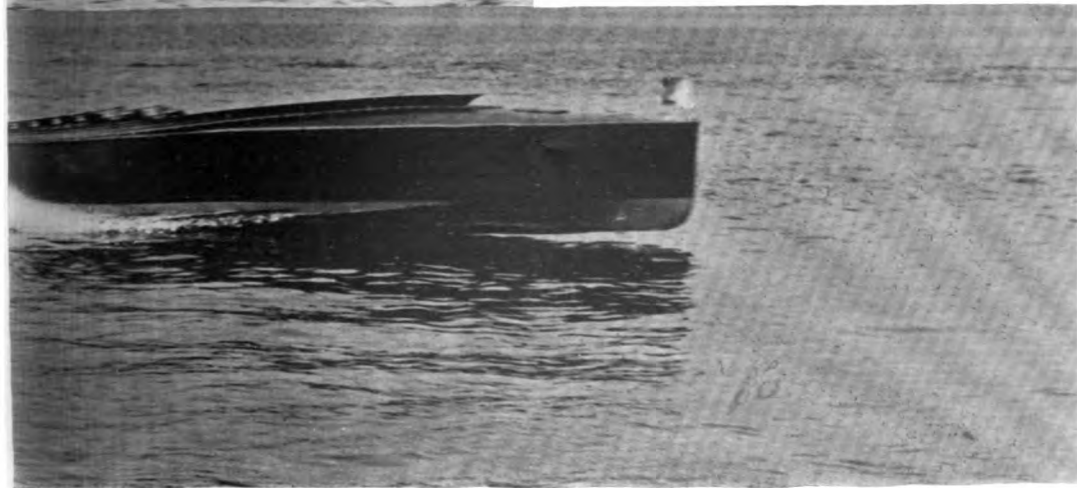


"DESPUJOLS II"

"ANKLE DEEP"

"MAPLE LEAF IV"

THESE ARE THE MOTOR BOATS THAT FINISHED IN THE FIRST DIVISION OF THE GREAT HARMSWORTH TROPHY WHICH HAS JUST BEEN RUN AT COWES, ENGLAND. "MAPLE LEAF IV" AGAIN DEMONSTRATES THAT SHE IS UNQUESTIONABLY THE FASTEST MOTOR BOAT THAT HAS EVER BEEN BUILT. SHE TOOK THE PRIZE EASILY FROM HER RIVALS AND WAS IN TROUBLE ONLY DURING THE FIRST DAY OF THE EVENT, WHEN SHE WAS BEATEN BY THE FRENCH ENTRY, "DESPUJOLS II."





International News Service

COUNT MANKOWSKI

THE OWNER OF "ANKLE DEEP," WHICH RAN SECOND IN THE HARMSWORTH TROPHY, IS EVERY INCH A SPORTSMAN AND IS EXCEEDINGLY POPULAR IN ALL BOATING CIRCLES. IN THE OPINION OF MANY HE DESERVES TO RANK WITH MR. BLACKTON, OWNER OF THE FAMOUS "BABY RELIANCES," FIRST AMONG THE MOTOR BOAT PATRONS OF THIS COUNTRY.

seven races for hydroplanes, speeds greater than 42 miles an hour were made by the winner, and in one race the winner averaged 44.8 miles an hour. For one ten-mile lap in the Perry Centennial Free-for-All, the winner, *Kitty Hawk V*, averaged 47.2 miles per hour, the fastest speed made in this country in a race this year.

Kitty Hawk V is a 26-foot, single-step hydroplane, designed by John L. Hacker of Detroit and owned by H. H. Timken of Canton, Ohio. Her motor is a 12-cylinder, 300 H. P. Van Blerck. Other noted performers at this regatta were *Hazel II*, a 20-foot Elco-plane, owned by A. E. Smith of New York City, and powered with two Curtiss aeroplane motors of 100 horse-power each connected in tandem. This boat won two of the heats in the 26-foot class, one at a speed of 43.2 and the other at 42.6 miles an hour.

Kitty Hawk, Jr., a 20-footer, with only one 125 H. P., 6-cylinder motor, ran consistently in seven races, her best speed being 42.6 and her slowest 40.4 miles an hour.

Baby Reliance II, with a 180 H. P. Sterling, captured two first prizes, the first race being run at a 45.1 mile an hour clip, and the second at 44.8 miles an hour.

At the Chicago races, a two-mile course was laid out in the river harbor, inside the breakwater, which proved much more satisfactory than the course in 1912, which was out in the open waters of Lake Michigan. Here *Baby Speed Demon*, owned by Commodore J. Stuart Blackton, of Brooklyn, N. Y., a boat exactly similar to *Baby Reliance II*, won both the 20 and 26-foot classes, defeating such boats as *Oregon Kid*, *Van Blerck*, *Hydro Bullet*, *Kitty Hawk V*, *Kitty Hawk, Jr.*, and *Hazel II*. Her best speed at these races was 41 miles an hour.

Oregon Kid took the 32-foot class, covering the 12-mile course in the final heat in 18 minutes, 34 seconds.

The race for the Wrigley Trophy narrowed itself down to the same two boats which raced for the trophy in 1912, *Baby Reliance II* and *Disturber III*, and this year results were reversed, for *Disturber III* won, although the 20-footer gave her a hard fight. The winner's speed, 42 miles an hour for the 30 miles, was very good, considering the course required a bad turn every mile. *Kitty Hawk V*, *Oregon Kid*, *Barnacle*, *Hazel II*, and *Kitty Hawk, Jr.*



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AT THE INTERNATIONAL MOTOR BOAT RACES AT COWES, ENGLAND

SIR THOMAS LIPTON, SECOND FROM RIGHT, WITH HIS ARM LOCKED IN THAT OF SOPWITH, THE AVIATOR, WHO PILOTED THE ENGLISH ENTRY, "MAPLE LEAF IV." THE HARMSWORTH TROPHY IS SHOWN

also ran, but accidents put them out before the finish.

At Keokuk, Iowa, on the Mississippi from August 26th to 29th, *Oregon Kid* had everything her own way, winning the 20-mile race for the Webb Trophy, in 26 : 18; the first heat Class E., 20 miles in 26 : 50; second heat, 10 miles in 15 : 07; first heat of Class D, 15 miles in 24 : 19; second heat, 5 miles in 9 : 14. The same boat also took the mile dart in 1 : 15-2/5, which is at the rate of 47.8 miles an hour.

Many fast boats took part in this regatta, among them being the *Hydro Bullet*, owned by E. H. Deakin of Chicago; *Barnacle*, owned by Adam Weckler of Chicago; *Baby Reliance*, owned by J. S. Blackton of New York; *Oregon Kid* and *Van Blerck*, both owned by S. F. Brock, of Portland, Oregon, and *Little Leading Lady*, owned by W. P. Cleveland of Galena, Ill.

At Buffalo, on the Niagara River, September 4, 5 and 6, the greatest hydroplane race meet of the year took place,

as far as the number of high-speed boats taking part is concerned. On the first day of this meet, nine hydroplanes started, all of which were capable of 40 miles an hour or better. On the second day eight started, and on the third, six. The *Baby Reliances* were again very successful, one of this brand winning first place each day. The first day it was *Baby Speed Demon*, the next day *Baby Reliance* won, and on the third day *Haida Papoose* carried off the honors. The best speed for a race was made on the second day by *Baby Reliance* with a 180 H. P. Sterling which averaged 43.2 miles an hour of the 33-mile course.

The American motor boat is making vast strides—the mile-a-minute hydroplane is confidently expected. The design, the speed and other essentials are already the property of our craft, but their reliability is far below par. The ability to go all the distance rather than a part of the way at record-breaking speed is what our boats must have. Surely American enterprise will conquer this one defect.



Underwood & Underwood

CELEBRATING THE DISTRIBUTION OF LAND AMONG THE PEOPLE OF THE MEXICAN REPUBLIC

WHAT MARKED THE BEGINNING OF MEXICO'S AGRARIAN PLANS WAS INAUGURATED AUGUST 10, AT MATAMORAS, WHEN THE 71,000-ACRE ESTATE OF GENERAL DIAZ WAS SEIZED BY GENERAL BLANCO, COMMANDER-IN-CHIEF OF THE CONSTITUTIONALISTS, AND DISTRIBUTED AMONG THE PEOPLE AT A VERY NOMINAL COST ONLY TO THOSE WHO WOULD LIVE UPON AND CULTIVATE THE LAND. TWENTY YEARS WERE GIVEN THE NATIVES IN WHICH TO PAY FOR THE LAND IN YEARLY PAYMENTS

WHAT THE PRESS HAS TO SAY

Concerning NATIONAL WATERWAYS

From the hundreds of complimentary notices so generously tendered by the press of the country, we have room to quote only those given below.

NATIONAL WATERWAYS, the last word in magazine making, published under the auspices of the National Rivers and Harbors Congress, is, in many ways, the handsomest magazine yet published.

It is a gem of the printer's art and in wealth of illustration and breadth of subject matter transcends anything that has been issued touching upon the most vital of economic subjects, that of traffic on road, rail and river.

NATIONAL WATERWAYS presents in a wonderfully interesting manner, not only through well-selected and artistically rendered illustrations, but through forceful, vigorous, compelling English at the hands of nation-wide known men and women, the commercial and the picturesque sides of the waterway question. And, what is more, it makes an irresistible appeal for a broad, generous, comprehensive policy of waterway development on the part of Congress and those charged with executing the will of the nation's legislators.—*Baltimore American*, Dec. 3, 1912.

From the Munder-Thomsen Company, Baltimore, in whose plant it was produced, we have received the initial number of NATIONAL WATERWAYS, a magazine published by the National Rivers and Harbors Congress, Washington, D. C. It is a publication that deserves to succeed, if for no other reason than because its publishers have endeavored to produce a magazine that would be pleasing to the eye and easy to read. The cover design is a process illustration in colors, and a photo-color reproduction is also used for the frontispiece. The simple, restrained typography and careful makeup are two noticeable features, but what especially distinguishes it from magazines of similar character is the excellence of the presswork. It is difficult to conceive how this could be improved. There is a snap and depth of contrast to the many half-tone illustrations which is frequently lacking in magazine printing, and there does not seem to be the slightest variation in color of any of the pages; indeed, presswork such as this is usually confined to high-grade catalogues.—*The Printing Art Suggestion Book*.

It is quite inconceivable that what is commonly regarded as a purely technical and material subject could be rendered so attractive and interesting as the important matter of the improvement of our rivers and harbors has been handled in NATIONAL WATERWAYS. The first volume is truly remarkable, not only for its non-technical treatment of the subject, but for its breadth of scope. It would be hard to suggest any improvement in the general plan of the magazine as revealed in this first issue.—EDWIN M. HOOD, of the *Associated Press*.

Please Mention NATIONAL WATERWAYS

DO YOU KNOW ?

IMPORTANT FACTS STATED IN THE FORM OF QUESTIONS

Do you know

—*that* the people of the United States pay out each year about three times as much in transportation taxes, that is for the carriage of freight and passengers, as they pay in taxes for the support of government—national, state and local?

—*that* transportation affects the price of everything that everybody buys, sells, cats, wears or uses in any way whatever—air, water and sunshine excepted?

—*that* cheap transportation benefits both the producer and the consumer, making wheat and cotton higher and flour and cloth lower at one and the same time?

—*that* the cheapest known transportation is water transportation, costing, on the average, from one-sixth to one-tenth as much as transportation by rail?

—*that* the direct saving on the goods actually carried by water in the United States is over \$550,000,000 a year?

—*that* railways always make lower rates when subject to the competition of waterways than where such competition does not exist?

—*that* the indirect saving, thus caused, is probably as large as the direct saving given above?

—*that* both the direct and indirect saving would be largely increased by the further improvement of our waterways?

—*that* waterways always increase the profits of the railways with which they come into competition—for the reason that waterways, by giving cheap transportation for raw materials, actually create both industry and commerce?

—*that* there are only two cities in the United States with a population of 200,000 or over which are not situated on navigable waterways?

—*that* Frankfort, Germany, grew more in the twenty years after the River Main was canalized than it had grown in the fifteen hundred years before?

—*that* Germany, which is nearly 60,000 square miles smaller than Texas, but has one of the finest waterway systems in the world, had in 1912 a foreign commerce greater than that of the United States by over \$500,000,000?

—*that* throughout the civilized world the largest cities, the densest population, the busiest and most prosperous people are to be found along navigable waterways?

—*that* the surest and speediest way to develop the resources of the nation, to increase the growth of every city and community in the country, to promote the prosperity of every interest, including the railroads, and of every citizen, east, west, north and south, is to improve all our waterways as fast and as far as we can?

—*that* although the United States is bearing the entire expense of the Panama Canal most of the benefits will go to foreign nations until our own waterways are improved?

—*that* if we shall make possible the complete development of our natural resources through the improvement of all our waterways, the United States can dominate the commerce of the world?

—*that* since the Government has exclusive control over all navigable waters, it depends on the Congress of the United States whether the work of creating a great national system of waterways shall be done at all and how soon it shall be finished?

—*that* the one supreme, resistless power in the United States is the power of public opinion?

Do YOU KNOW that the only organization which is carrying on a nation-wide campaign for the creation of an active, intelligent, result-compelling public opinion regarding waterways is the NATIONAL RIVERS AND HARBORS CONGRESS?

You will find briefly set forth in the following terse paragraphs what the National Rivers and Harbors Congress is, advocates and has already accomplished.

A FEW FACTS

CONCERNING THE NATIONAL RIVERS AND HARBORS CONGRESS

The National Rivers and Harbors Congress is a voluntary civic organization, organized in 1901 and reorganized in 1906, the purpose of which is to bring about the improvement and utilization of the waterways and harbors of the United States. In its membership are included Boards of Trade, Chambers of Commerce, Business Men's Clubs and other commercial organizations throughout the country; City Councils, Boards of Harbor Commissioners and similar municipal bodies; Waterway Associations formed to promote individual projects; and public-spirited individuals, firms and corporations who recognize the necessity for the increase of transportation facilities and the decrease of transportation costs which improved waterways would furnish.

The membership runs into the thousands and includes prominent people in all sections of the country. All officers are elected for terms of one year by the delegates in attendance upon the annual convention, the Secretary-Treasurer, who devotes his entire time to the work of the organization, being the only one who receives a salary.

WHAT IT ADVOCATES

The National Rivers and Harbors Congress advocates a policy which will secure the systematic, comprehensive and speedy improvement of all the waterways and harbors of the United States to such extent as shall be found commercially justifiable.

This policy may be briefly outlined as follows:

First, Regular annual appropriations for waterway improvements.

Second, Adequate appropriations, which should be at least \$50,000,000 per year.

Third, The use of continuing contracts so that work once begun may be pushed steadily forward to completion.

Fourth, The provision of funds by an issue of bonds when current revenues are insufficient, just as has been done for the Panama Canal.

Fifth, The provision of adequately equipped terminals, either publicly owned or so controlled that they shall be open to all users on equal and reasonable terms.

Sixth, The enactment and enforcement of all legislation needed to secure constructive cooperation instead of destructive competition between railways and waterways.

WHAT IT HAS ACCOMPLISHED

The National Rivers and Harbors Congress has been actively at work for seven years. Among the results which have been accomplished may be named:

The passage of River and Harbor Bills every year instead of once in three years.

An increase of over \$10,000,000 in average annual appropriations for waterways.

The placing of some projects under continuing contracts and the naming of definite times for the completion of others.

The authorization of a much-needed increase in the number of U. S. Engineers in charge of waterway improvements.

The exemption of vessels carrying coastwise commerce of the United States from the payment of tolls for passing through the Panama Canal.

The passage of legislation to protect waterways from unfair competition, and giving the Interstate Commerce Commission power to regulate the relations between railways and waterways.

No claim is made that the National Rivers and Harbors Congress is entitled to the entire credit for these results. The effective work done by local waterway associations and commercial organizations is fully recognized and the invaluable cooperation of the press of the country is cordially appreciated. But this Congress has insistently, consistently and persistently advocated these things, has conducted a nation-wide campaign in their behalf, and is entitled to a large share of the credit for their accomplishment.

AMONG OUR ENDORSERS



The value of important waterways and the commerce development of the country cannot be exaggerated, and the necessity that the Federal Government should adopt a definite and fixed policy that will provide for their speedy improvement must be evident to every one who considers the matter at all.

It gives me great pleasure to express my deep interest in all that the National Rivers and Harbors Congress is doing.

Woodrow Wilson



Perhaps the greatest influence toward the framing of a broad, comprehensive, progressive policy of river and harbor improvements is being exercised by the National Rivers and Harbors Congress. Its motto is "A Policy, Not a Project." Through its work the question of waterway improvements has been most prominently and favorably brought before the public, and men of the highest character and influence throughout the country are enlisting in its cause. It urges the appropriation of fifty millions of dollars per annum. Such a policy has my hearty approval.

James S. Felt



A special word is due the National Rivers and Harbors Congress. It is the one organization that is advocating a waterway policy and not a waterway project, and is national in its scope, for it represents practically all the friends of waterway improvement in the United States. The question of river and harbor improvements and the benefit that each will bring to the producer and consumer has, through its work, been favorably and prominently brought to the attention of the country. Prominent commercial organizations and men of character and influence throughout practically every section of the country are enlisted in the cause it represents. Its work being strictly national, and in no sense local or sectional, merits and should receive the support of our citizens.

Theodore Roosevelt

Please Mention NATIONAL WATERWAYS

SEATING THE 28th PRESIDENT

AN IMPOSING MILITARY AND CIVIC DISPLAY ATTENDS
THE PROGRESS OF THE NEW EXECUTIVES
TO THE WHITE HOUSE

AT the command of a free people, without the mediæval mummery, the tinsel and the trappings, the "fuss and furbelow," so inherently a part of the coronation of Old World sovereigns, Woodrow Wilson, the Scholar of Princeton, the teacher, the historian and the statesman, and Thomas Riley Marshall, the lawyer, the progressive American, who has forged his political armor after his own pattern, became the President and Vice-President, respectively, of the United States, on Tuesday, March 4, 1913, under auspices at once the most brilliant and the most elaborate, since the beginning of the Republic. And while one man stepped peacefully into the Presidency, another, William Howard Taft, beloved for his Americanism, esteemed for his devotion to the Law and the Constitution, sincerely admired for his optimism, good fellowship and wholesomeness of heart, stepped out of a mighty office, with much power, into the ranks of the plain people of the Nation.

And this great change in the political history of the country was accomplished with such elaboration as becomes a free people, differing not at all in kind, but larger and upon a more magnificent scale, than that which every citizen sees on festal occasions at home, with no show of nobility, no display of aristocracy, except as it permeates the body politic of an enlightened democracy.

From the Peace Monument at the foot of Capitol Hill to the reviewing stand (a replica of Monticello), in front of the White House, Washington, the capital city of a hundred millions of free people, was a kaleidoscope of color on Inauguration Day and the procession, in honor of the induction into office of the President and Vice-President, with its military, its naval and its civic features largely accentuated, made a never-to-be-forgotten occasion in the history of the Presidency, notwithstanding the expressed wish of President Wilson that the occasion should be simple and devoid of unnecessary ostentation.

Nature smiled a welcome for the new era and a vast concourse of people wished for the new Executive strength and wisdom to meet the responsibilities of his high office. On the immediate pages following there is presented NATIONAL WATERWAYS'

Pictorial Supplement of the Inauguration and the Woman Suffrage Tableaus and Pageant

TENS OF THOUSANDS LOOK ON WHILE



THE CAPITAL A SEA OF LIGHT
THE ABOVE IS OF PENNSYLVANIA AVENUE LOOKING FROM FOURTEENTH STREET TOWARDS THE CAPITOL. AFTER THE FALL OF DARKNESS
THIS SCENE PRESENTED THE GREATEST OF "GREAT WHITE WAYS." ITS MYRIADS OF LIGHTS, OF
EVERY HUE AND COLOR, RIVALED NOONDAY IN THEIR BRILLIANCY

OATH IS TAKEN BY WOODROW WILSON



REVIEWING THE PARADE

HERE IS SHOWN THE REVIEW PAVILION OF THE COURT OF HONOR. FROM THIS STAND THE PRESIDENT AND VICE-PRESIDENT WITH THEIR FAMILIES VIEWED THE FIVE-HOUR PARADE. PRESIDENT WILSON IN THE CENTER, VICE-PRESIDENT MARSHALL TO HIS LEFT, AND GEN. LEONARD WOOD TO HIS RIGHT.

© Harris & Ewing



"GOOD-BYE!" THE PSYCHOLOGICAL MOMENT OF EX-PRESIDENT TAIT'S LEAVETAKING OF PRESIDENT WILSON ON THE THRESHOLD OF THE WHITE HOUSE. © Buck, 1913
THE FARRAGUTS, DECATURS AND DEWEYS OF THE FUTURE. THE CADETS FROM THE UNITED STATES NAVAL ACADEMY AT ANNAPOLIS, WHO WERE ACCLAIMED FOR THE BRILLIANCY OF THEIR SHOWING IN THE PARADE. Photo by Buck



PRECISE IN STEP AND RHYTHM AND EXEMPLAR IN SOLDIERLY BEARING--THE WEST POINT CADETS, WHO OCCUPIED A FOREMOST POSITION IN THE INAUGURAL PARADE. *Photo by Buck*
AFTER THE INAUGURATION OATH; PRESIDENT WILSON AND EX-PRESIDENT TAFT RETURNING TO THE WHITE HOUSE FROM THE CAPITOL; OPPOSITE IN CARRIAGE, SENATOR BACON AND FORMER SENATOR CRANE. © *Buck, 1913*

"ANTIS" CHARGE CIRCUS TACTICS

By MRS. ARTHUR M. DODGE

President, the National Association Opposed to Woman Suffrage



"Our Keynote is Dignity"



DIGNITY was the keynote of the magnificent meeting of the National Association Opposed to Woman Suffrage, held at the Belasco Theatre in Washington on the eve of the inauguration festival. Dignity is and will be the keynote of all public demonstrations in which the opponents of the Woman Suffrage movement will figure. The Dignity of Womanhood is the cardinal principle for which we stand. And it is by the contrast we effect, by the unswerving maintenance of that dignified position, which we expect ultimately to convince the nation of the



shall hope to effect, that we expect to demonstrate the supremacy of our

I have been asked by many whether our organization would arrange an "Anti-Suffrage Hike" or an "Anti-Suffrage Pageant." Not while I have the honor to be the leader of the We Anti-Suffragists recall Daniel Webster's dictum that "just governments do not derive their power from tumultuous assemblages." When we must resort to performances that suggest the circus, with all its sideshows, we shall declare as lost the first principle of our movement—the Dignity of Womanhood and the prin-



audience that responded to our organization would Suffrage Hike" or an "Anti-Suffrage Hike" while I have the honor to be the leader of the We Anti-Suffragists recall Daniel Webster's dictum that "just governments do not derive their power from tumultuous assemblages." When we must resort to performances that suggest the circus, with all its sideshows, we shall declare as lost the first principle of our movement—the Dignity of Womanhood and the prin-

But the really splendid audience that responded to our invitation at the Washington meeting was proof positive of the support and the endorsement we enjoy from the Every walk of present-day intelligent men and women of the land to the humblest worker, and we had but to state the vital principles for which we stand, to receive an ovation that spoke volumes for the attitude of the public at large to ward Women Suffrage.



are being put forward by the advocates of Woman Suffrage, they are bringing to that movement all the publicity which its adherents seek more, perhaps, than is being sought. The wretched performances of the "militant Suffragists" of London have been endorsed by the antics of their American sisters within the very shadow of the Washington Monument. It remained for women, who promise to show a more excellent way in government, to use an inauguration of a President as a means of advertising political propaganda.



"Our Watchword, Home"

As for the extraordinary "demonstrations" that are being put forward by the advocates of Woman Suffrage, they are bringing to that movement all the publicity which its adherents seek more, perhaps, than is being sought. The wretched performances of the "militant Suffragists" of London have been endorsed by the antics of their American sisters within the very shadow of the Washington Monument. It remained for women, who promise to show a more excellent way in government, to use an inauguration of a President as a means of advertising political propaganda.



"Our Watchword, Home"

PROMINENT IN NATIONAL ASSOCIATION OPPOSED TO WOMAN SUFFRAGE

In the order shown—Mrs. A. J. George, Secretary of Massachusetts Association. Mrs. George ranks high as a public speaker. Mrs. Bayard Taylor Kiliani, Chairman of the New York State Organization. Miss Alice Hill Chittenden, President of the New York Association. Mrs. Arthur M. Dodge, President of the National Association. Mrs. R. G. Hazard, of Rhode Island. Mrs. John B. Heron, of Pittsburg, Penn.; Miss Lucy J. Price, of Cleveland, Ohio. Miss Price is considered by many as the most eloquent speaker of the cause. Miss Evelyn Sears, of Massachusetts. Miss Sears was the former Woman Tennis Champion of the World.



THE WOMAN SUFFRAGE PAGEANT

By NELLIE BLY

IT was great! It was stupendous! The Woman Suffrage Pageant, that wended its triumphant way through stately Pennsylvania Avenue, from the Capitol to the White House, and to Continental Hall. It triumphed even over the incompetence of the wretched police force "ordered" to protect it. It was surpassed in its effect as a political demonstration only by the vast multitude that cheered it on its way. That multitude! It will go down into history as one of the finest, most responsive and most unified in spirit that ever speeded a conquering army toward its goal.

Such color! Such life! Such unbounded enthusiasm—and a purpose so serious!

From every state, from every city, from every quarter of these United States the brave, determined and noble women came. And what a panorama they unfolded for the crowds that thronged "the Avenue," as Pennsylvania Avenue is termed by the people of Washington. From the remotest parts of the Universe they came. And their showing plainly told the world-wide extent of the great movement.

Fine, noble delegations. And more delegations. By states, by cities, by villages. Each vying with the other to advance the principle, the right, of Woman Suffrage! And the floats! Superbly mounted and decorated, and all in exquisite taste! Color in plenty, but in admirable harmony. And what an apotheosis of beauty was realized in the tableaux and dances in Greek costume on the steps of the Treasury!

Yes, the Woman Suffrage Pageant of March 3, 1913, must pass into history as one of the signal events of the Twentieth Century. That vast multitude will contribute to the final attainment of the ballot for women. And that great army that paraded from the Capitol to the White House, and beyond, will henceforth be the Grand Army of Woman Suffrage, whereof the "crack" battallion will be the "hikers." Yes, the "hikers" were there, headed by their valiant leader, "General" Rosalie Jones. "General" Jones has done a great work, and the National Suffrage Association appreciates it. Even the threatened war with Mexico cannot exclude us from the front pages of the press. Suffrage is our cause. It is the universal cause, the cause of womanhood. We have done more than the man who told the sun to stand still. We have made it rise in the West, and it is traveling East.



Photo by Buck

THE VAST CROWD THAT SURGED INTO PENNSYLVANIA AVENUE, UNCHECKED BY THE POLICE, FREQUENTLY BLOCKED THE PARADE. THIS WANT OF POLICE PROTECTION HAS BECOME THE SUBJECT OF A CONGRESSIONAL INVESTIGATION



MRS. RICHARD COKE BURLINSON
GRAND MARSHAL

SCENES FROM THE PAGEANT

In the gorgeous Greek tableaux, depicted in the panorama at the top of the two pages, the youngest and fairest Woman Suffrage advocates posed and danced, headed by Mme. Hedwig Reicher, the actress and interpreter of Ibsen, who essayed Columbia. These beautiful scenes were enacted upon the magnificent terrace formed by the broad steps of the National Treasury. A trio of mounted "White Brigade," shown in the center picture, was lustily cheered by the multitude of spectators that lined the route of the pageant all the way from the Capitol to Continental Hall.



MISS INEZ MILHOLLAND



MISS FLORENCE NOYES

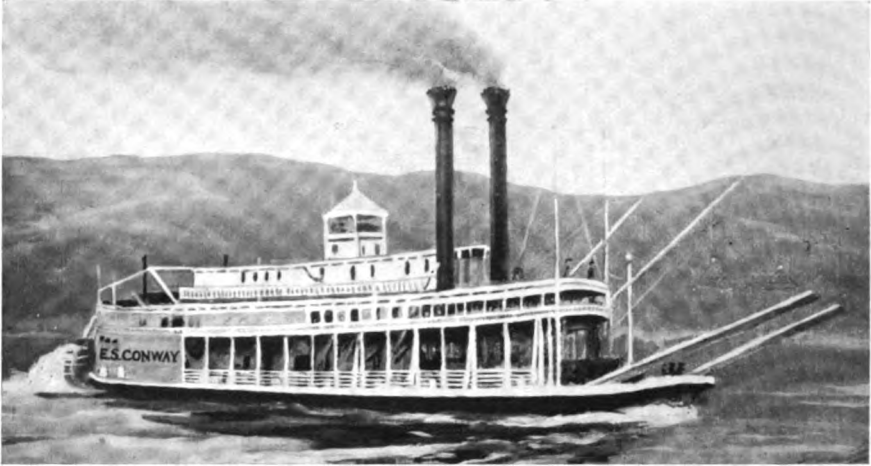
SCENES FROM THE PAGEANT

The float shown in the center of the page sounds the keynote of the Woman Suffrage movement and the appearance of this motto was the signal for a mighty outburst of applause and cheering from the hosts of spectators, regardless of sex, color, or position. The cheering hundreds of thousands were drawn from every rank of national life. In the lower left corner, Miss Florence Noyes, the dancer, is shown, surrounded by coryphees in one of the tableaux enacted on the Treasury steps, to the music of military bands.



MISS FLORENCE LAWRENCE
HEAD HERALD

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(La Salle, 96 miles from Chicago on the Illinois River)

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Via the Drainage Canal, Illinois and Michigan Canal, and the Illinois and
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APRIL 13, 1913

Company aided materially by its Freight Traffic Committee of the Chicago Association of Commerce, in celebration of this important event.

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CHICAGO ASSOCIATION OF COMMERCE

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The Chicago and New Orleans Transportation Co.
OTIS BUILDING, CHICAGO, ILLINOIS

THREE ESSENTIALS

All advertising experts agree that the questions to fire at the affable young man with a magazine hid under his coat tails are—

1. WHO Are Your Readers?
2. WHERE Are They, and
3. HOW MANY?

To ask these weighty questions, using proper inflection and other business of voice and dignity, immediately, forthwith, or otherwise, stamps the interrogator as "one of those expert space buyers."

But be it far from me to cast a slur at these venerable questions. And this with a serious good reason, too—

For instance, the question WHO means the *quality* of your readers, their occupation, what and how much they pay to read your magazine, and a dozen other searching questions of the reasons why.

And as it is with the question WHO, so is it with the queries of WHERE and HOW MANY, for verily these have stood the test since Advertising was young.

The only way to answer fully and completely the WHO of NATIONAL WATERWAYS, without attempting to struggle with one's superlatives, is to say, simply and sincerely, *the best*.

To prove the point, consider who it is in your community that have given of their time and energy in pushing forward such a big national movement as waterway development. Was it the ten-dollar clerk or the fellow that negotiated car fare from you this morning, or any other of the faithful readers of the fervent fiction of the day? Not much—the readers of NATIONAL WATERWAYS are almost exclusively numbered with those who have arrived—men that live well, buy largely and have the cash money with which to do it. In a word, they represent the live, active business progress of this country. They are the ones to whom must be given the major portion of the credit for securing over \$300,000,000 for waterway development. This magazine is its readers' magazine. They own it. They know that exclusively in its pages are to be found the facts in which they are most interested.

Where are our readers? There are over 50,000 miles of waterways in this country. Where you find a waterway, there, too, you find readers of NATIONAL WATERWAYS.

How MANY? Just exactly the measure for which you pay.

A statement of our rates and circulation will clinch the argument.

Address, NATIONAL WATERWAYS,

Washington, D. C.

JAMES WM. BRYAN, *Business Manager*

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For Membership and Magazine, or for Magazine alone

Membership Dues include year's subscription to *National Waterways*, published each month by the National Rivers and Harbors Congress, also *Convention Reports* and other publications. *Individual Dues*, are in the United States and Mexico, \$5.00; abroad, \$6.00; Canada, \$5.50.

Subscription Price to Magazine, without privileges of Membership, is, in the United States and Mexico, \$2.50; abroad, \$3.00; Canada, \$2.75. Single Copies, 25 cents in the United States; elsewhere, 35 cents.

19

S. A. Thompson, Secretary,
National Rivers and Harbors Congress,
Washington, D. C.

_____ desire to subscribe { to Membership and Magazine } and enclose check
to Magazine
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19

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(Write your Address)



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All steamers are equipped with
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This means when Business Men and Manufacturers who are national advertisers come forward and offer their goods in a convincing way they will get a prompt and profitable response to their advertising through the advertising columns of

The Pittsburgh Post

(EVERY MORNING AND SUNDAY)

Tell the great market covered most thoroughly by The Post about your goods and your proposition and your message will be read by a thrifty and responsive class of people who believe thoroughly in The Post because it is a real, live, clean newspaper.

EMIL M. SCHOLZ, General Manager

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The bigness of the Pittsburgh district would fill whole pages of this magazine if details were told. It is nearer the center of fifty millions of people, or the major population of the United States, than is any other industrial district.

Over a million and a half dollars are paid out daily for wages and salaries in the Pittsburgh district and these people are good spenders and mighty good customers to have, and you can secure them the newspaper salesman—through the advertising columns of

The Pittsburgh Sun

(EVERY AFTERNOON EXCEPT SUNDAY)

The favorite afternoon clean paper of thousands of the buying families of this great busy and prosperous territory. And right now conditions are ideal for influencing your sales through advertising in The Pittsburgh Sun. We will be glad to have you write us for further details.

EMIL M. SCHOLZ, General Manager

CONE, LORENZEN & WOODMAN

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"FAVORITE" \$50

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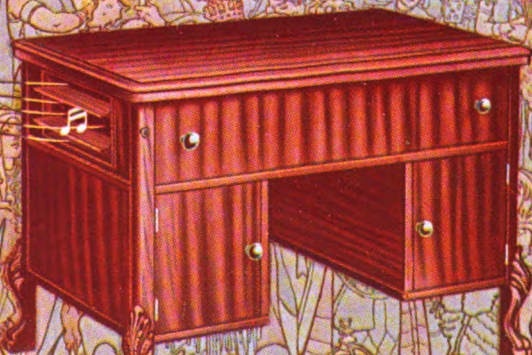
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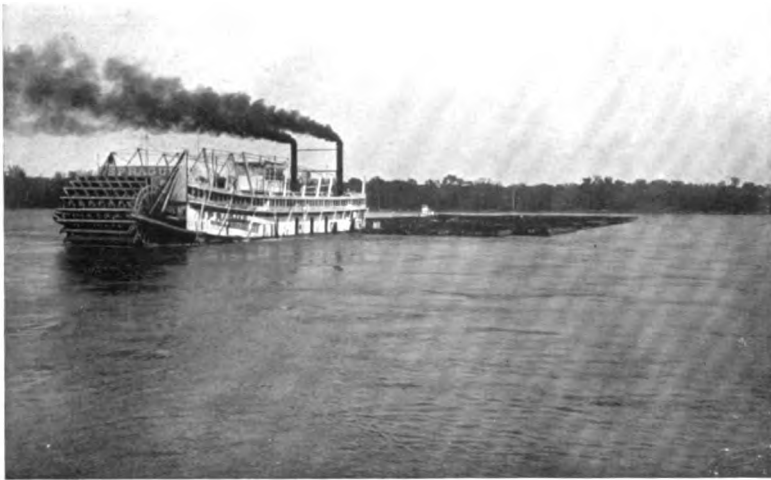
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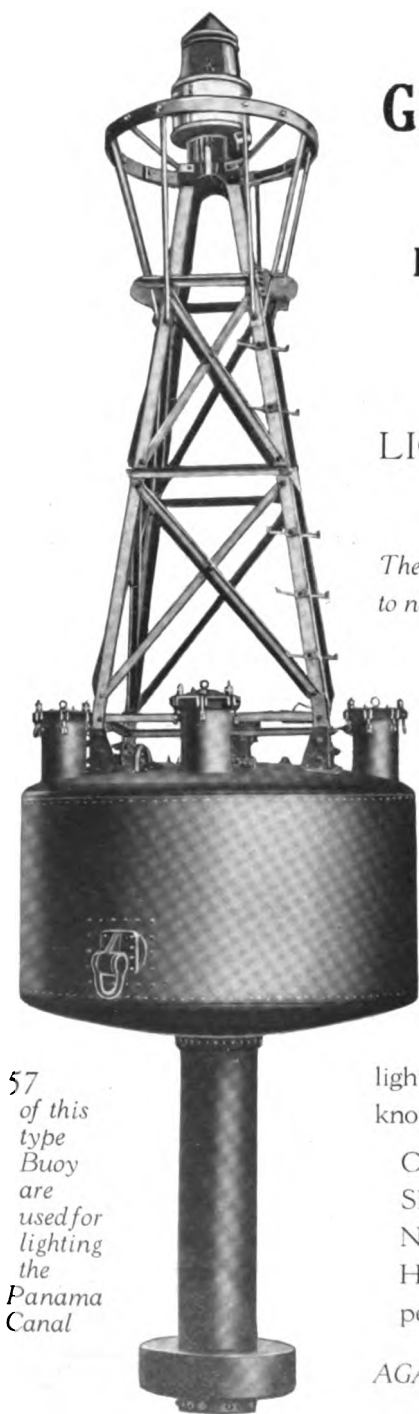
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are
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lighting
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GATE VALVES : SLUICE

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*All Sizes Every Style
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*Frost-Proof Efficient Simple
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All parts can be removed without digging up hydrant. Gate locking device prevents street from being flooded should stand-pipe be broken. *Send for 1913 Catalog*



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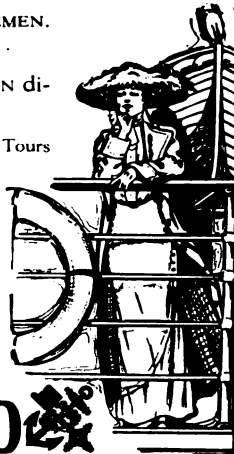
JANUARY 14

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AUTUMN AND WINTER AT ASHEVILLE LAND OF THE SKY

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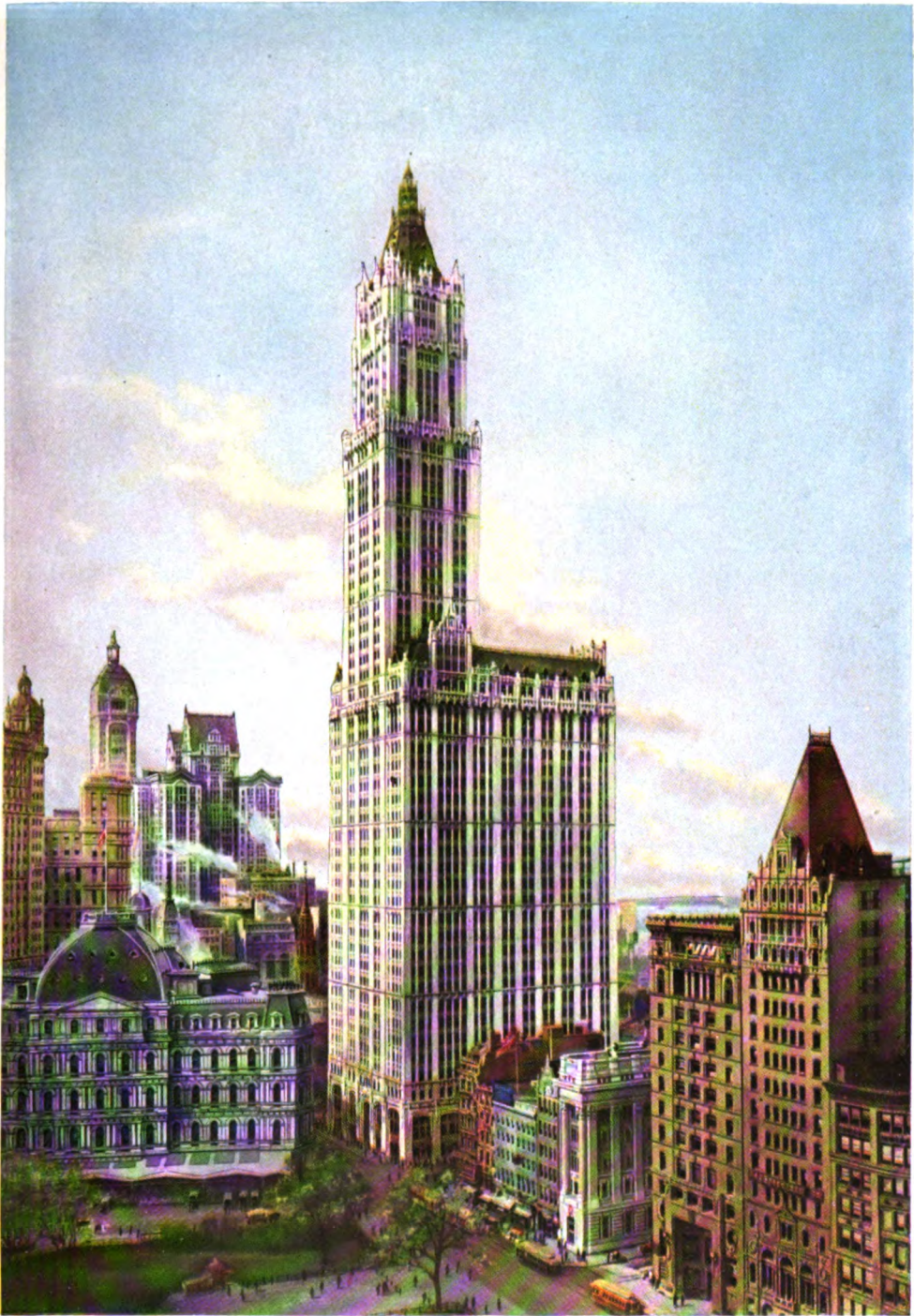
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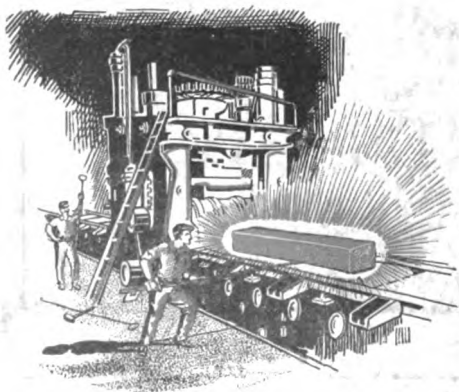
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