

### How Frankfort Solved Waterway Problem

By System of Movable Dams and Harbor Improvement German City Turns Loss Into Gain.

By S. A. Thompson.

Field Secretary National Rivers and Harbors Congress.

The city of Frankfort-on-the-Main in Germany, is said to have been founded by the Romans about A. D. 180, and in after years was the residence of the great King Charlemagne. Frankfort had its troubles like other towns. It was ravaged by fire and flood; it was devastated by war and pestilence; but its people were of sturdy stock and whenever disaster overtook them, they valiantly went to work to repair the damage and build the city larger than before. While the passing centuries brought both up and down, the ups amounted to more than the downs, and by 1850 Frankfort had attained a population of about 140,000.

Now the thing which happened to Frankfort was this—that it grew more in the 30 years from 1850 to 1880 than it had grown in all the 1700 years since first the Roman legions pitched their camp upon its site. Today the city proper contains 140,000 people, while if the outlying manufacturing towns and residence suburbs be included, we have a Greater Frankfort, with a population of nearly 600,000 souls. Cities in new countries often grow as fast or faster than that, but such a change in the rate of growth of a long established city, lying in a densely populated and highly developed country, is as remarkable as it is unusual. It could not have come about without a special reason. The question is "Why did it happen?"

**New Problem Was Solved.** Frankfort had about everything possessed by other cities of the same region—schools, churches, parks, libraries, mills, factories, banks, wholesalers and retail establishments, streets, and an excellent railroad system with lines leading out in all directions, including two, which ran down the banks of the Rhine. Frankfort was in early times the most important mercantile city of western Germany, but at a later date her trade extensively was carried by other cities, especially by Mannheim and Mayence. Naturally Frankfort began to study the situation in order to learn wherein her position was inferior to that of her rivals, and it was decided that the difficulty arose chiefly from the fact that Mannheim and Mayence lay directly upon the Rhine, while Frankfort was 20 miles away.

It was, of course, impossible to take Frankfort to the Rhine, but entirely possible to do something which would practically amount to bringing the Rhine to Frankfort. In other words, what they needed was not the actual Rhine, but a navigable connection with that great highway, so that the merchants and manufacturers of Frankfort could trade without transshipment with any other point on the inland waterways of Germany, Holland, France and Belgium, and could ship goods all the way by water to or from any port on all the seven seas.

**Movable Dams Made.** At first it was proposed to build a canal, and in fact the plans were prepared and approved by the government engineers, and a preliminary appropriation of \$10,000 was granted for beginning the work. But before anything was done on the canal a much better plan was proposed and adopted. This was the canalization of the river Main by the construction of movable weirs or dams. The Main is not a large river and before its improvement was obstructed by rapids and shallows. However, when it was not dried up in summer, frozen up in winter or flooded in the spring, it provided a channel in which small boats drawn by horses could ply back and forth between Frankfort and the Rhine.

These movable dams, of which five were needed, are similar in principle to those which have since been built on the Ohio and several other rivers in this country. They are made in sections so that in times of flood or running low they can be laid down in the bottom of the river, and raised again when the river resumes its normal condition. The locks which were necessary to allow the passage of boats when the dams were raised were made of a size to accommodate boats 280 feet long, 35 feet wide and with 5 feet draft. The work on the canal, including the locks and dams, was done by the government at a cost of \$1,309,500.

**Harbor Is Formed.** But the German government knows that a waterway without terminal facilities is just about as useless as a railway would be under the same conditions. So when the government agreed to build the canal, Frankfort had to agree to build harbor. This harbor, which provided moorings and anchorage for 50 or 60 Rhine boats of the largest class, and was equipped with warehouses, sheds, railway tracks, elevators, hydraulic cranes, and other modern appliances for handling freight, cost the city of Frankfort \$1,582,750, a total investment for state and city of \$2,892,250. Has the investment paid?

Channel and harbor were finished and opened for use in October, 1888, and traffic at once began to increase. Consul General Mason reports that the saving in reduced freight rates amounted to over \$695,000 in the first two years, and adds:

"Nor is this all, nor even the most important part of it. The whole commercial and industrial life of the city has been quickened and restored by the new and improved conditions which the canalized river has entailed. The city

has been put into fair and practical competition with its former rivals. The cheapening of coal, coke and raw materials has had a most important influence. Many kinds of manufactures which were previously impossible here, by reason of the high cost of fuel, are now prosperous and rapidly developing. Important iron mines farther up the valley of the Rhine and Saar, which had long been abandoned since the charcoal supply failed, have now been reopened by the cheap coal of the Rhine valley and Moselle.

Not was the development of manufacturing limited to the city of Frankfort along the whole valley, but became one vast workshop. Volume VI of the Report of the British Royal Commission on Canals and Waterways gives two maps, side by side, showing graphically the trade and industry of the Main valley from Frankfort to the Rhine before the river was improved and 15 years later. The difference is tremendous, but detailed figures would be wearisome. It is worth while to call attention to the great chemical works at Hoechst, with its 10,000 employees, that at Mulheim, with 3000, and other large establishments at Mulheim, Grödenheim and Offenbach. Without the cheap freights furnished by the river their present development would have been impossible.

One of the best and surest indications of the general development brought about by the river improvement is the growth of traffic on the river itself. This traffic, which in 1887 was only 194,000 metric tons (224,800 tons), had risen to 1,819,225 tons in 1896, and to 2,170,000 tons in 1910, which is almost three times as much as it was when the railways had a practical monopoly of the business of Frankfort.

**Gain In Passenger Traffic.** Nor is that the whole story; it is only the beginning; for the traffic has not only been multiplied in quantity, but equalized in direction. Formerly Frankfort had little to sell and almost everything to buy. Cars and boats both came in loaded and went back empty. Now they go loaded in both directions, and the traffic, being more symmetrical, is more economical and profitable.

Still further and most important of all, the traffic was not only freed in quantity but equalized in direction, and was raised in grade. Dr. Leo Sympher, chief engineer of canals and waterways of Prussia, states that since the canalized river was opened, there has never been a year when the railway of Frankfort had any greater traffic than they had before. The traffic that the river took away was mostly coal, while the greater part of the nearly 2,000,000 tons of the traffic increase between 1887 and 1910 is composed of high grade commodities manufactured from the materials brought in by the river and of goods handled at special rates by the fast freight service which takes the place of express service in this country. Both classes of traffic command much higher rates and are much more profitable to handle than coal.

Besides all else there is a tremendous increase in passenger traffic, which the railroads have derived from the development of vast industries and the growth of an active, concentrated, prosperous population, which has resulted therefrom. An excellent indication of the benefits which have accrued to the railways is found in the fact that, a few years after the river was improved, and in consequence of the growth it produced, the Prussian railway administration found it desirable to build a combined passenger and freight station at a cost of \$10,000,000. Even that was outgrown and additions have recently been made at an expense of more than \$1,000,000. Over 500 trains daily enter and leave this splendid station which would do credit to an American city of twice the size of Frankfort.

While on the subject it is worth while to note another paragraph from Consul General Mason, which gives a still broader view of the effect of improved waterways upon competing railways. He says:

"If further testimony on this general topic were needed, it would be found in the steady, growing prosperity of the railways of Prussia, which from their location are brought into most direct competition with the principal waterways. During the fiscal year 1896-97 the Prussian railroads earned \$247,381,970, and the Budget estimate, always conservative, for the current year is \$284,000,000 from the same source. This is considerably more than half the entire income of the Prussian government, and after deducting all expenses of operation, construction, repairs, new equipment, interest on bonds, etc., leaves a net revenue of \$53,122,000 to be turned into the treasury of the state.

"That a portion of this surplus should be devoted each year to improving and extending the canal and navigable river system is in furtherance of a policy the wisdom of which time and experience have fully confirmed."

In giving the original locks a usable

length of 220 feet the engineers who planned the improvement thought they had made ample provision for all the traffic which would be developed on many years, but to less than three years after they were finished a demand arose for their enlargement. Between 1891 and 1894 the locks were rebuilt and given a usable length of 1150 feet, which is 150 more than the locks on the Panama canal will have. This great lock allows trains of four or five boats to be locked through at one operation and without transshipment. An additional lock and dam were also built, extending the channel to Offenbach, some four miles by river above Frankfort. The total cost of these improvements was \$155,625.

**Increase in Population.** It was not long, either, until extensions and improvements were needed in the harbor of Frankfort, and between 1890 and 1892 the city spent \$408,150 for this purpose. But still the traffic grew and kept on growing until it was seen that more radical steps must be taken to provide not only for its present volume, but for its future increase. And at the present time Frankfort is

at work building a new harbor, to supplement the one she already has, at an estimated cost of \$17,124,000. This will make a total expenditure for harbor purposes of \$18,232,150, made by a city which is not an ocean port, but stands nearly 400 miles from the sea on a tributary of the Rhine.

To sum it up in a few words, the expenditure of a trifle over \$2,000,000 on the improvement of one little river has produced such an increase in population, such a growth of commerce and industry, as to justify the expenditure of more than \$18,000,000 on the terminal facilities of a single city in order to properly care for the traffic developed. If such results have followed the improvement of a little German stream—imagine in comparison with many of the rivers in this country—who can estimate the benefits which would result if the policy advocated by the National Rivers and Harbors Congress should be adopted and the waterways and harbors of the United States should be promptly improved and properly provided with terminals?

English "as she is spoken"—the popular aim of omission and commission the language has to stand for—was the subject claiming the attention of the State Women's Press Club at their regular monthly meeting Wednesday evening last.

### WOMEN WRITERS DECRY ABUSE OF ENGLISH

Mrs. E. Spencer speaking on "Pro-nunciation of English" assured her hearers to get acquainted with the dictionary and learn the significance of the "classified" books. And stick to the good old Anglo-Saxon words. Mrs. Spencer further advised—"The words that trip the heart," in preference to strange foreign expressions, alien to the tongue.

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# TRADE EXPANSION No. 4 IN THE CITY OF PORTLAND

Now for the plan—the details—the facts, about the project which makes this series of advertisements so unusual, and which is necessarily so because of the unusual character of the donation which it contemplates. A number of churches in Portland are in need of a pipe organ. Many of them do not feel able and are really not able to buy one of the high-class character that is desired. The efforts of many Portland congregations along the lines of missionary work, for the purpose of raising funds to secure an organ, have been watched with varying degrees of sympathy by every man, woman and child in Portland who has been blessed with an early religious training. Thirty merchants of Portland, the names of whom are appended, have undertaken to crystallize this sentiment by working out a plan whereby, in combination with their efforts for trade expansion, one of the best pipe organs made may be absolutely given away in friendly competition.

This prize organ has, among other stops, the famous vox humana—a superb tone effect that most wonderfully and thoroughly reproduces the tonal effects of a quartet or sextet of voices. This particular tone effect in the Salt Lake Tabernacle organ, which was built by the Kimball company, has received more enthusiastic praise than probably any one other feature, and the vox humana stop in the prize organ is positively the equal in every way to the world-renowned Salt Lake organ.

The Kimball organ has been selected because of the many points of superiority it contains; the first important practical advantage being an action that is absolutely reliable in all details of operation. The action is operated without the use of springs, weights, or mechanical devices of any kind. Each speaking pipe has its own individual controlling valve, and each set of pipes has its own individual wind supply, and thus in Kimball pipe organs a solidity of tone is insured even when the full capacity of organ is reached.

The Kimball pipe organ action is rapid, responsive and instantaneous and its repetition is greater than that of the modern grand piano. The coupling of keyboards and octaves is operated by direct pneumatic pressure and the touch remains the same under one stop, or when the complete organ is used. The pneumatic action is not subject to climatic impairment; the metal tubing therein cannot possibly be affected by dampness or changes of temperature. For many years the Kimball workmen have been noted for the superb voicing or intonation of their pipe-organ work. The cash value of the prize organ is \$2750. It will be donated free to a Portland church upon the following

**CONDITIONS:** The result will be decided by vote. Votes will be given exclusively by the firms named in this advertisement—one vote with each twenty-five cents received, either on account or cash sales. The contest is open, beginning tomorrow, October 9, to all Portland churches.

The prize will be awarded to the church receiving the highest number of votes. The ballots may be turned over to the church direct or deposited in the ballot boxes at the Columbia Hardware Co., 104 Fourth street, or at J. J. Kadderly Hardware Store, 130 First street. The contest will close at 6 o'clock p. m. Thursday, February 1, 1912. The firms issuing ballots must stamp their name thereon, and the purchaser must write in the name of the church which is to receive credit therefor, and then fill in his name and address; otherwise the ballot is void. All ballots must be presented to the Committee on Awards (which will be appointed by the contestants themselves), at Eilers Music House, by 12 o'clock noon, Friday, February 2, 1912, where the organ from now on will be on exhibition.

Churches and their friends who are so fortunate as to have a pipe organ now will be interested in helping some sister congregation secure this organ free. On the other hand, in case the church securing the organ finds it necessary to have an instrument of still larger specifications, or should an organ be required specially constructed to conform with the architecture of the auditorium, then it has been arranged that a credit of \$2750, the price of this organ, will be given toward payment of any other higher-priced Kimball instrument that the church may desire to have installed.

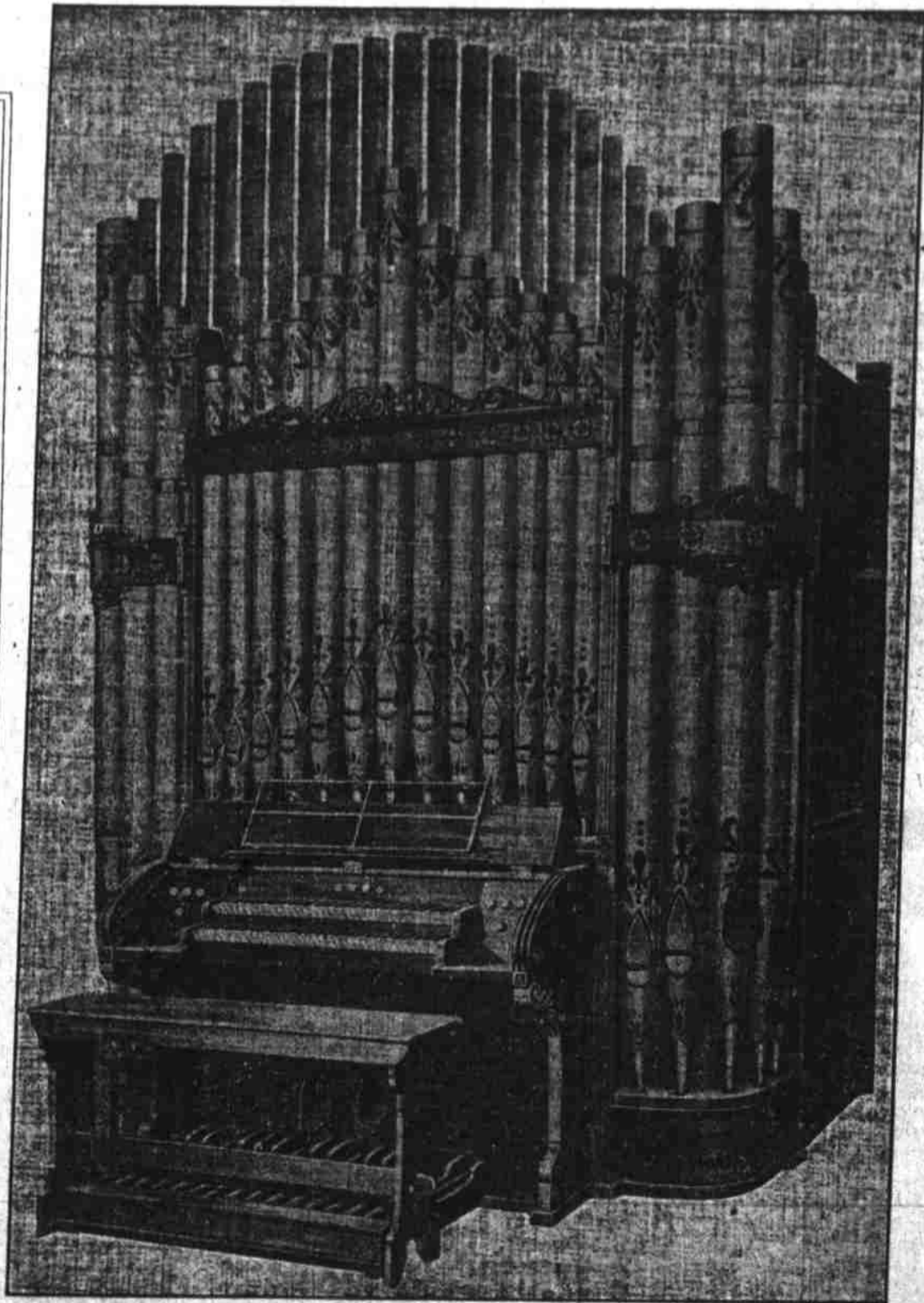
It is important to every one who is interested that a personal appeal be made to every one of his or her friends, which means:

First, every member of the Portland clergy should communicate with every member of his congregation; second, that every member of each church congregation in Portland should in turn communicate with each one of their friends—everybody of course having religious sympathies, even though they may be without religious tendencies.

Your especial attention is directed to the fact that this contest is devoid of all the proverbial conditions that make participation in such things more or less of a hardship or inconvenience. On the contrary, the merchants whose liberality make this donation possible have extended themselves to the limit in their effort to make it easy for everybody concerned. Note, for example, that "a vote is given without being requested, in exchange for every 25 cents received." Observe, too, that it is open to "charge" purchases as well as "cash." Take cognizance of the fact that no specific or extra amounts have to be purchased in order to secure ballots. And remember another thing—which is best of all—that every one of the merchants included in this enterprise are among the best and most reliable of their kind in Portland.

Tear out and constantly carry the following list in your purse, so it will always be available for ready reference:

- Ray Barkhurst, Merchant Tailor, 94 6th
- Barretts, Inc., Lighting Fixtures, Wiring, 410 Morrison.
- Boyer Printing Co., 85 1/2 5th, near Oak
- Boyd Tea Co., Teas, Coffees, Etc., 209 Salmon
- Buffum & Pendleton, Clothiers, Men's Furnishings, 311 Morrison
- Butterworth-St. Helen Co., Lighting Fixtures, 464 Washington
- Christiansen Art Co., Pictures, Framing, 187 W. Park
- Columbia Hardware Co., 104 Fourth
- Columbia Milling Co., E. 2d and Market; 5 votes with each sack White Mountain Flour—ask your grocer.
- C. Christiansen, Jeweler, 2d floor, Corbett Bldg.
- The Crown Millinery, 392 Morrison
- Eilers Music House, 7th and Alder
- R. E. Farrell Co., Cloaks, Suits, Furs, Corsets, Millinery, 7th and Alder
- Fraleigh Bros., Millinery, 214 3d.
- Goodyear Shoe Co., 144-46 Fourth
- Independent Coal & Ice Co., 353 Stark



- J. J. Kadderly, Hardware, 130 1st and 131 Front
- Knight Shoe Co., 7th and Morrison, Tull & Gibbs Bldg.
- W. P. Kraner & Co., Merchant Tailors, 202 Couch Bldg.
- Morgan Wall Paper Co., 230 Second
- Frank Nau, Druggist, 6th and Alder
- Pacific Laundry Co., 234 Arthur St.
- Portland Seed Co., Front and Yamhill
- Perkins Jewelry Co., 5th and Wash., Perkins Hotel Bldg.
- I. F. Powers Furniture Co., 3d and Yamhill
- Rasmussen Co., Paints, Oils, N. E. Cor. 2d and Taylor
- Robinson & Co., Clothiers, Men's Furnishings, 289-91 Washington
- Rowe & Martin, Druggists, 323 Washington
- Rubins, Hair Goods, Manufacturing, Plumbers, Selling Bldg., 6th and Alder
- Max M. Smith, Florist, 150 5th
- Wm. H. Walker, Grocer, 19th and Washington
- Wilson, The Trunk Man, 251 Washington
- F. P. Young, Ladies' Furnishings, Umbrellas, 323 Morrison

Finally, to all, please take notice for the last time in advance of the beginning of the Contest. Simultaneously with the opening of business tomorrow, Monday, October 9, 1911, the contest for the donation of this grand Pipe Organ will start and the distribution of ballots at the stores mentioned above will begin.

Portland, Or., October 8, 1911.

IRA F. POWERS,  
R. L. FARRELL,  
HY EILERS, Committee.

## FOR SICK HEADACHE, SOUR STOMACH, LAZY LIVER OR SLUGGISH BOWELS.

Turn the rascals out—the headache, the biliousness, the indigestion, the sick, sour stomach and foul gases—turn them out tonight and keep them out with Cascarets. Millions of men and women take a Cascaret now and then and never know the misery caused by a lazy liver, clogged bowels or an upset stomach.

Don't put in another day of distress. Let Cascarets cleanse and regulate your stomach; remove the sour, undigested and fermenting food and that misery-making gas; take the excess bile from your liver and carry off the decomposed waste matter and poison from the intestines and bowels. Then you will feel great.

A Cascaret tonight will straighten you out by morning—a 10-cent box means a clear head and cheerfulness for months. Don't forget the children—their little insides need a good, gentle cleansing, too.

**Cascarets**  
REGULATE STOMACH, LIVER & BOWELS.  
TASTE GOOD—NEVER GRIPE OR SICKEN.

THEY WORK WHILE YOU SLEEP

Hyakell & Son  
Adv. Agency