1899-4-21 Manchester Courier

Germans believe in a combination of railways and canals for purposes of inland transport, where Englishmen are disposed to rely on railways alone. A notable example of this tendency is the project for cutting a ship canal across the great northern plain of Germany, from the Rhine to the Elbe, which is now before the Prussian Diet. Despite the slowness of the progress which the Baltic Canal is making in the favour of Shipowners, and notwithstanding the great profits yielded by the State railways, the Prussian Government is warmly supporting the new scheme, even at the risk of alienating the votes of the Agrarian party. The latter object to the proposed ship canal on the ground that it would give increased facilities for the importation of the foreign food, stuffs which even now compete with the produce of the eastern provinces of Prussia. The new waterway will be upwards of 200 miles long; it will comprise no fewer than 13 locks and the whole work of construction is expected to be finished within ten years, at an estimated total cost of £13,000,000. German engineers are apparently not less sanguine than those of other countries. But the work will certainly be accomplished. The provinces through which the canal is to pass, and other localities which' expect to derive benefit from it, have already guaranteed interest of 3 per cent on the capital expended, as well as the cost of maintenance. The Minister of Public Works declares that the canal must be made if the traffic demands of the Rhenish-Westphalian coal district are not to overpower the railway administration. It will relieve the congested system of the latter, by furnishing a cheap mode of transport for heavy goods. As for the farmers' objection, "it will enable the agricultural East and the manufacturing West to exchange their products at cheap rates." Herr Thielen might have added that the execution of the scheme will further increase the facilities for exporting German manufactured goods to England. The idea has evidently been taken from the Manchester Ship Canal, but the compliment thus implied would have been more agreeable if it had not been accompanied by a prospect of intensified competition with the cheap labour of Germany. When will our own railways be relieved from the congestion of goods traffic by the transfer of some portion of it to existing canals? There seems to be no other way towards abolishing that great disparity between British and German railway rates winch is in itself a heavy handicap on English commerce.

1899-5-21 Liverpool Mercury

A Great Ship Canal

The ship canal which connects Amsterdam with the North Sea, and, on which over 3½ million sterling has already been spent, will be considerably enlarged, The Dutch Government has submitted a Bill to the Chambers dealing with the improvements of this waterway, making it possible for vessels of 650 by 70 feet, and drawing over 28 feet, to reach Amsterdam without lightening. The work is to be completed within ten years.

1899-8-12 Manchester Guardian

THE NEWEST GERMAN CANAL.

OPENED YESTERDAY.

The Dortmund-Ems Canal, which was yesterday formally opened by the German Emperor, constitutes an important addition to the waterways of Germany. Starting at the North Sea part of Emden, and utilising the river Ems for a part of its length, it posses through Munster, in Westphalia. and at present terminates at the Westphalian village of Herne, situate 27½ miles from the Rhine. The connection with Dortmund is formed by a branch, nine miles long, which leaves the main canal at Henrichenburg. The difference of level at this point has bean overcome by the construction, at a cost of about £125,000, of an elevator, by means of which vessels cm be raised or lowered the requisite 49 feet in a few minutes. The total length from Emden to Herne is about 150 miles. When the work of constructing this canal was started in 1891. the Ems above Papenburg would not accommodate boats of much more draught than 4ft. 5ins, and carrying from 50 to 75 tons of cargo, whereas vessels of 600 or 700 tons burden will now be able to proceed direct from the North Sea to

Dortmund. or vice versa. The effect of these facilities should be of substantial importance, especially to the great iron industries amend Dortmund. There was some idea at first that the canal would be of great advantage for the conveyance of coal and coke from Westphalia to Emden and beyond; but the collieries are mostly situated some distance from the canal, and, as the coal is of a quality that will not stand too much handling, it is expected that the railway will be chiefly utilised for its conveyance. As regards the iron industry, however, it is certain that large quantities of are which have hitherto been shipped to Dortmund by way of the Dutch ports will now go direct by the new canal, and one official estimate puts the probable quantity at from 250.000 to 300,000 tons a year. Timber supplies from the Baltic will also reach Westphalia more readily than before, while a very important branch of the traffic is expected to be found in grain from Eastern Germany (via the North Sea-Baltic Canal) and elsewhere. The return cargoes would consist chiefly of iron and general goods. with such coal and coke as multi be secured without too much trouble. A considerable fleet of lighters of from 600 to 700 tons has been organised by a Westphalian company, formed for the purpose of carrying on the canal transport, and other firms in the district have ordered vessels of a smaller size for the same purpose. Altogether the canal is expected to give a considerable impetus to the industries of this part of Germany. while in the opinion of the British Vice-Consul at Papenburg it -"will have a distinctly favourable influence upon British shipping." The Dortmund-Ems Canal is of still further importance by reason of the proposal that it shall form a link in a great chain of waterway communication which would stretch right across Germany, connecting, in an almost direct line, the Rhine, the Weser, the Elbe, the oder, and the Vistula.

The Emperor William yesterday attended the formal opening of the Dortmund-Ems Canal. Replying to an address from the Chief Burgomaster, his Majesty said that the Canal which be bad just inspected was regarded by him only as a work to form part of a greater whole. Both he himself and the Government were firmly and inflexibly determined to go further. (Enthusiastic cheers.) Finally, he expressed the hope that the nation's representatives would place him in a position to do so before the end of this year.

1899-8-12 Manchester Courier

The German Emperor has of late been so in-tent on conciliating the French that some of his own people at home have taken the opportunity to get a little out of hand. The slashing defeat of his Government, in the Prussian Diet, over the Bill to authorise the construction of a canal between the Rhine and the Elbe, means more than the rejection of a cherished plan of the Kaiser's for conferring greatly increased means of communication upon the western portions of the Empire. It means the declared mutiny of that Agrarian or Conservative party which has hitherto been the main support of the Government in both the Prussian Diet and the Imperial Reichstag. The country has revolted against the towns. Farmers and landowners, especially throughout East Germany, object to the proposed new canal on the ground that, by further facilitating the importation and distribution of American food-stuffs, it would ruin the interests of home agriculture, which are already greatly depressed. The contention of the Government is that the fulfilment of the scheme would benefit the country all round, but the divisions in the Diet on Saturday show how utterly this argument has failed to convince the Agrarian intellect. The Emperor has spoken of his "inflexible purpose" to carry the scheme, and doubtless, if circumstances were favourable, the Royal and Imperial reply to the majority in the Diet would be an immediate dissolution. This, however, is rendered practically impossible for. some time to come by the state of public business, so that the Emperor-King will have abundance of leisure to determine means of vindicating his impugned authority. The incident may give rise to a temporary re-arrangement of political powers in Prussia, but the Crown and the Agrarian party are so necessary to each other that a permanent estrangement—much less antaganism—is highly improbable.

1899-8-21 Manchester Guardian

KAISER'S CANAL SCHEMES.

GOVERNMENT BILL REJECTED.

("OBSERVER" TELEGRAM) Berlin, Saturday Night.

The Prussian Lower House to-day offered an unwonted sight, the floor and galleries being packed to their utmost capacity. The excitement was intense, both among members and onlookers, for after the sharp notes in the Governmental newspapers last night and the announcement that the Kaiser considered the attitude of Agrarians as a direct challenge to himself, there was no doubt that a crisis of some sort was pending. Two motions were before the House which, if passed, would at any rate allow the Bill, though in a truncated form, to go to the Upper House. The first was that of the National Liberals, to reinstate the Government proposals, and the second that of the Centre Party for the construction of a canal from Dortmund to the Rhine.

The speeches were listened to very patiently, but they threw no new light on the subject. Herr von Kardoff, for the Agrarians, put forward the old seagulls of refusal, viz., that canals furthered industry at the expense of agriculture, and reproached the Government with playing into the hands of Social Democrats, and that the result of the present policy would be that in fifty years Germany would be a Social Democratic Republic. The Finance Minister, Herr von Miguel, replied that the Government had the interests of the whole population at heart—a view which the Imperial Chancellor afterwards endorsed. Prince Hohenlohe further stated that if the canal scheme, as it was apparent, was thrown out to-day, it would not disappear from the orders of the day. "It will return," he confirmed, " and the Government will see that it is accepted. The question cannot be treated alone for it will entail serious consequences for the Government, which cannot but prejudicial, especially in the domain of commercial It must not be forgotten that the Agrarians strongly oppose the commercial treaties favoured by the Government.

The result of the voting was that 147 members voted for and 235 against the first motion, which was therefore lost by 88. The second motion received 134 votes, mostly from the Centre, while 275 voted against. The whole Bill is thus finally thrown out.

Never before has the Government in Germany or Prussia suffered such a Parliamentary defeat the present one. The rumours of the dissolution of Parliament are most probably unfounded, for work has yet to be done with measures for carrying out the new Civil Code for Germany which comes into force on January 1 next. The question now resolves itself into a trial of strength for political power in the country.

1899-8-21 Liverpool Courier

THE GREAT GERMAN CANAL SCHEME.

THE PRESS AND THE REJECTION.

EMPEROR WILLIAM DEFIED.

[Reuter’s Telegram]

Berlin, Saturday..—The newspapers today recognise that the rejection by the Prussian Diet of the Emperor's great central canal scheme marks an epoch in Prussian and German political history, the Conservatives having for the first time since the formation of the Empire openly defied the direct mandate and overt injunction of the Sovereign. One result of the present position is that the Socialists are applauding the firmness of the agrarian junkers in upholding the sacred principles of constitutional right.

1899-8-23 Liverpool Mercury

THE RHINE-ELBE CANAL

The Berlin correspondent- of the "Times" says—The great northern plain of Germany is watered by numerous rivers, such as the Rhine, Ems, Weser, Elbe, Oder, and Vistula, which from the Middle Ages to the present day have been extensively used for commercial purposes. With the exception of a few tributaries of secondary importance all these rivers flow from south to north, and it has long

been the natural desire of German traders to supplement these natural trade routes by a system of artificial waterways, running east and west, which should connect them one with another and form a network covering the whole face of the country. The idea of constructing a canal from the Rhine to the Elbe, as a new outlet for the products of the industrial provinces of West. Germany, is thus by no means of recent origin. More than forty years ago the desire for some cheaper mode of transport than that afforded by the railway system began to be manifested in Westphalia and Rhenish Prussia. A pamphlet on the subject appeared in 1856, and the project. received increasing support from the public, until, in 1863, the Prussian Government ordered a preliminary survey to be undertaken as a first step towards the construction of a Rhine and Elbe. canal. The proposal, however, met with violent opposition from numerous committees, and the events of 1864 and of the following years, which concentrated public opinion almost exclusively upon political affairs, forced the scheme into the background until the end of the Franco-German War.

The great activity in all departments of German industry which resulted from the establishment of peace and of German unity revived public interest in such projects; but a serious crisis followed the too rapid commercial development, and it was not till 1877 that the Government felt justified in taking practical steps to wards an extension of the canal system. In that year a memorandum on "The Waterways of Prussia, their extension and improvement," was laid before the Diet. In 1878 the necessary commercial and technical investigations were initiated, and in 1882 a scheme for the construction of a canal from the Rhine to the Elbe was drawn up by the engineers Michaelis and Hess. This scheme of 1883 is, in all essentials, the same as that now before the country. The Government in 1883 laid their proposals before the Diet, but failed to carry them through the Upper House. In 1886 the Bill providing for the construction of the canal between the Oder and the Spree was submitted to the Diet, and gave the Government another opportunity of introducing their Rhine and Elbe canal scheme. Public opinion had advanced so far by this time that both Houses agreed to the construction of a canal connecting Dortmund with the river Ems. The execution of this project was entrusted to a canal commission established at Munster, which began the actual construction of the canal in 1892. The waterway, which is 160 miles in length, has been completed at an outlay of only £3,971,500, and was opened to navigation on Augest 10.

As soon as the construction of the canal connecting Dortmund with the Ems was decided upon, efforts began to be made to induce the Government to extend the waterway westwards to the Rhine, and committees were formed to promote this object. Five of the projects recommended by the committee were thoroughly examined by the Government, and the preference was given to the so-called "South Emscher Canal" scheme. This selection met with the approval of a meeting held at Dortmund by those interested in the extension of the canal westwards, but a Bill authorising the execution of the project was rejected by the Prussian Diet in 1893. A similar agitation was started in Hannover and Lower Saxony in favour of an extension eastwards of the Dortmund-Ems waterway by means of a so-called "central canal" which should connect the Ems with the Elbe. In 1891 the "Committee for the Promotion of the Rhine and Elbe Canal" and the " Association for the Extension of River and Canal Navigation in Lower Saxony" demanded the execution of a general survey preparatory to the construction of a canal from the Ems to the Elbe. This was agreed to, and plans were drawn up which, however, were afterwards modified to make the "Central Canal" part, of one great waterway, nearly 300 miles long, from the Rhine to the Elbe, and a project was also taken into consideration for rendering the Weser from Bremen to Minden, where the proposed canal would cross the river, navigable for the class of vessel which would use the canal. All these schemes were ultimately combined, and were submitted in April to the Prussian Diet in the form of a comprehensive Bill..

The Government proposals provide for (1) the construction of a canal through the valley of the Emscher from Herne, on the canal connecting Dortmund with the Ems, to Ruhrort, on the Rhine, and of a feeder to supply this canal with water from the Ruhr; (2) the improvement of the existing canal between Dortmund and the Ems, by the construction of locks at Henrichenburg and Munster; (3) the construction of a central canal from the Ems to the Elbe to consist of a main renal from Bevergern to Heinrichenburg, a place on the Elbe a little below Magdeburg, of two feeders to bring

water from the Weser and the Leine, and entering the main canal at Dankersen and Buchholz respectively, and of eight branch canals to connect the main waterway with Osnabruck, Minden, Linden, WulfeL Hildesheim, Lehrte, Peine, and Magdeburg; and (4) the works necessary to render the Weser from Bremen to Hameln, some distance above the point where the central canal will cross the river, suitable for meal traffic.

It is intended to make the canal navigable for ships up to 750 tons burden.. It will have a depth of 2½ metres and a width of 30 metres at the water line. As it will cross the great North German plain, very few locks will be required On an average there will be only one lock for every 24 miles of waterway, while there will be one clear stretch of over 130 miles and another of nearly 60 miles. The fewness of locks will not only greatly facilitate navigation, but will materially lessen the cost of construction and maintenance. It in estimated that the construction of the whole of this great canal system will involve an outlay of £13,500,000, which will include the cost of widening and deepening the Weser from Hameln to Minden. The cost of the work on the lower part of the river from Minden to Bremen will probably be borne by the Hanseatic town of Bremen. It is made a condition of the construction of the canal that the provincial assemblies and other corporations interested shall guarantee the State an annual revenue from tolls and other sources sufficient to cover the cost of maintaining the waterway, and to provide an interest of 3 per cent. on the cost of construction, and an annual contribution of ½ per cent towards a sinking fund for the extinction of the debt incurred. These guarantees amount to a yearly total of £270,000, leaving £290,000 to be guaranteed by the State. The greater part of this guarantee of £270,000 per annum has already been secured, and it is hoped that the city of Berlin, which is connected by the Spree with the Elbe and thus with the Rhino and Elbe Canal, will assume the responsibility for the amount not yet covered. which is under 10 per cent, of the whole. The enormous extent of the traffic by writer to and from Berlin fully justifies this expectation.

The construction of the canal will undoubtedly confer a great benefit upon German commerce and industry. The Rhenish anti Westphalian district, which it will connect with the centre and east of Germany, is the most important seat of German industry. Although in extent it forms but 1/150th part of the German Empire, it contains 1/22nd of its population, and it brings to the German railways a quarter of their whole traffic. In 1894 this district was credited with 44 per cent of the raw iron produced in Germany, while the output of its collieries increased from 37,000,000 tons in 1882 to 48,000,000 tons in 1897, and its other industries are developing at a similar rate. For the transport of these products there exists an extensive and well-organised system of railways, but, according to the railway authorities themselves, this system is no longer able to meet the demands made upon it, and has on several occasions within the past few years been on the point of breaking down. Moreover, the transport of heavy and bulky goods by rail is always exceedingly costly, and it is obvious that a canal connecting the Rhine with the Elbe will enable the western manufacturers to place their goods on the eastern and central markets at greatly reduced price, It is precisely this prospect which has roused the opposition of interested parties. They foresee that the industries of Silesia and other eastern provinces will be seriously affected by the competition of their western rivals, and the Agrarian party even fears that the cheapening of the means of transport will enable foreign agriculture to undersell the farmers of Eastern Prussia. There is probably a measure of truth in these contentions, and it must be admitted that the construction of the proposed canal will seriously effect the interests of some of the German population. Such considerations will scarcely, however, be allowed in the long run to outweigh the prospect, of the great benefits the new waterway will confer upon the general body of consumers and upon the western industrial classes. The Government, it may be added, has repeatedly announced its intention of carefully safeguarding all ouch local interests as may he threatened by the scheme, and, though it could not, of course, give any attention to the innumerable claims for compensation which have poured in from every part of the country, it has promised that, at any rate, the Silesian industrialists, who are the parties most seriously affected, shall have the Oder deepened and regulated so as to give them an adequate waterway to Berlin. or that failing the feasibility of such a scheme, they shall be accorded still further facilities on the German railway lime than they enjoy at present.

1899-8-23 Shipping World

The German Emperor's Scheme

Last week we predicted that, in the event of the Conservatives maintaining their opposition to the Government scheme of inland navigation, the Emperor would be obliged to appeal to the constituencies. Well, the Conservatives have stood to their guns, the Government Bill has been thrown out of the Prussian Lower House, and talk of a dissolution fills the air. The defeat was encountered over two motions, the first having for its object the incorporation of Government clauses formerly cut off from the Bill, and the second brought forward by the Centre party, to build a canal from Dortmund to the Rhine. The first proposal was defeated by a vote of 382 against 147 ; and the second by 275 against 134. And the breach between the Agrarians and the Government is complete.

1899-8-24 Fairplay

NORTH SEA AND BALTIC CANAL TRAFFIC.

THE traffic through the North Sea and Baltic Canal has again increased in volume this summer, notwithstanding the fact that in favourable weather numbers of vessels still go through the Sound. The takings, too, this year will be greater than before, but they will not suffice to cover expenses, owing principally to the heavy cost of the tug service. For ships in the coasting trade the tariff is fixed so low that the State loses money by every little craft that is towed through. This, of course, is an indirect State subsidy, but it does not attain its purpose. The carrying trade through the canal by means of small craft is being more and more appropriated by large lighters which Hamburg shipowners have built for the trade between that port and the Baltic, and which are now doing a regular business not only between Hamburg and the nearest Baltic ports, but with Danish and Swedish ports also. These flat-bottomed roomy lighters are furnished with diminutive motor power, only to be used in cases of necessity. The Hamburg lighters bring cargoes of timber from Sweden, some of it piled up several feet high on the deck, and easily thrown overboard and treated as a raft in bad weather. This lighterage business has had a similar effect to that experienced elsewhere—the canal traffic is increasing the railway traffic. Since the opening of the North Sea and Baltic Canal the goods traffic at the Kiel railway station has attained enormous dimensions. Should it not be possible to attract to the canal the big steamers plying between the English Channel and Scotland on the one hand, and German, Swedish, and Russian Baltic ports on the other, the lighterage traffic will play a very important part in the business of that waterway. The majority of the British steamers, however, which have to discharge at Kiel, go round by the Kattegat and the Belt. It does not seem quite a natural course to take, but the fact is that the tariff of charges payable for passage through the canal does not bear a favourable comparison with the distance saved by the short cut. A small vessel of 400 tons net has to pay 240 marks (£12) for the privilege, a medium-sized one of 1,000 tons net 420 m. (£21), one of 1,800 tons 480 m. (£24), and a large boat of 4,000 tons net 1,150 m. (£57 10s.), without reckoning pilotage money, tug-hire, etc. The charges bear specially heavily, therefore, on medium-sized and large steamers. A radical reduction in the tariff would probably have the result of inducing owners of large vessels bound to the Baltic to patronise the canal even in summer time, but the money out of pocket will have to be better proportioned to the time and distance saved before this happens. Insurance rates for the passage through the canal will probably become easier if underwriters see that the short cut is fraught with less risk than the Skagen and Sound route, and accidents in the canal are certainly less frequent than they were. This might be an additional inducement, but the lowering of the tariff is the main thing, and would no doubt in the end enable the State not only to cover current expenses, but to begin to pay a little dividend on the 156 million marks which the canal cost to make.

1899-8-26 Manchester City News

MORE CANALS FOR GERMANY.--By announcing his "fixed and unalterable" determination to have the Canal Bills which were a third time before the Prussian Diet last week passed into law, the Kaiser has at last raised against himself a strong force of opposition even amongst the ranks of his staunchest supporters, the Prussian Conservatives. The hostile majority against his "unbending will" number fully a hundred, and the Bills are at present in a state of suspended animation. A fortnight ago the Kaiser formally opened the canal connecting the mouth of the river Ems on the North Sea with Dortmund and the big coal and iron districts of Westphalia. The canal thus gives an outlet through German ground to one of the richest parts of the country, and avoids the passage down the Lower Rhine. The present Bills propose to continue this canal from Dortmund to the Rhine—a mere trifle of some thirty miles or so, and obviously of the greatest service. As it stands the canal is about 150 miles long, and has been eight years in the making. It would be absurd to cut it short at Dortmund without uniting it to the great waterway of Western Germany. But the real contest is over the proposal for the great central canal, which is to unite the Rhine and the Elbe. The distance between these two big rivers of the west and centre is about two hundred miles at the nearest points, and that measurement takes no account of the forests and bills which the canal would have to avoid in its course. Yet. if communication by canal is still of real value, the plan would be of peculiar service to Germany, for it would complete the whole scheme of waterway from west to east, and it would then be possible to move large freights from Holland to Russia through the very heart of the German territory, without paying foreigners for transport, or fearing foreign attack upon the way. From the Elbe there is water communication already, not only with Spandau and Berlin, but with the whole basin of the sluggish Oder, and so to the Vistula and across the great plains to the Memel and Niemen. The Kaiser demands the completion of the system. not only for commerce, but for military reasons of the highest importance; and certainly in time of war there cannot be too many means of transport for stores. The opposition to the scheme comes mainly from the landlords, who seem to fear foreign importations of grain and timber, and reductions in their rents and the value of their estates.

1899-8-30 Liverpool Post

THE REJECTION OF THE GERMAN CANAL SCHEME.

CLOSE OF THE PRUSSIAN DIET.

[Reuter’s Telegram]

Berlin, Tuesday.—The two Houses of the Prussian Diet met to-day in joint sitting, when Prince Hohenlohe read a speech closing the session. While thanking the Diet for its labours, the speech expressed the great regret of the Government that the canal scheme had not met with the approval of the Lower House. They, however, adhered steadfastly to that great project, and confidently anticipated that conviction of its necessity would gain more and more ground among the people. The Government hoped to succeed next session in bringing about an understanding with the Diet. The session was then formally declared closed.

1899-9-6 Shipping World

The Rhine-Elbe Canal

THERE is great commotion in Germany, and much bitterness in Prussia over the dismissal of the twenty District Presidents (Landräthe) and the two Provincial Presidents, who, as members of the Prussian Diet, voted against the Rhine-Elbe Canal Bill. As our readers are aware, we had fully expected a dissolution and an appeal to the country as a consequence of the Parliamentary defeat following the strong language used by the Emperor-King. But His Majesty and his. advisers have chosen the meaner part. They have dismissed the insubordinates as far as their power enabled them to do so, and that in a very clumsy way, involving a clear violation of the Prussian Constitution. Article 84 provides that members of the Legislature can never be called to account for the votes they give in the Chamber; for the opinions they express there they can only be called to account

inside the Chamber itself, in accordance with the standing orders. It would be easy enough to drive round this clause. But, unfortunately, in the dismissal of Professor Irmer from the Education Department, the Minister, Dr. Bosse, made it clear that the Professor's dismissal was because of his vote on the Rhine-Elbe Canal Bill,

IN the long run the Government will, no doubt, be able to secure that their own officers in the Legislature shall support the Government policy: that is what we do at St. Stephen's. For the present, however, it would seem that the action of the Ministry, which is very bitterly resented by the Conservatives, has destroyed all hopes of carrying the Canal Bill in the present, or even the next, Parliament. The case is forcibly put by the Frankfurter Zeitung, which, be it noted, is not a partisan of the Agrarians, or of the dismissed. We quote:

From the point of view of the future chances of the Canal Bill, the measure just adopted is futile. The dismissed officials remain Deputies, and the Conservatives will vote against the canal next session just because the Government has dismissed the Landräthe. If the canal was to be carried, the ranks of the officials ought to have been purged in a quite different fashion; the language of the edict of August 31 ought to have been of a different character, and, above all, the Diet ought to have been dissolved. It is a spectacle for gods, this action introduced with words that awakened astonishment and excited expectation, and ending, after all, in disciplinary measures against a handful of officials. What energy! What strength !"

A very pretty quarrel as it stands, and one which will not only suspend the work of internal improvement in the Empire, but seriously cripple Count von Bülow in his endeavours to execute reciprocal treaties with the United States, with Russia, and ourselves.

1899-9-6 Shipping World

APROPOS of the recent decision of the Prussian Parliament, it is interesting to note that the navigable waterways of the German Empire last year totalled 13,925 kilometres (about 8,000 miles), of which 3,570 kilometres were available for craft over 400 tons burthen. Lighters carrying 1,400 tons use the Rhine between Mannheim and Emmerich, and some are met with up to 2,000 tons.

1900-3-12 Manchester Guardian

THE little Ship Canal between Ghent and the Scheldt was in many ways the model of the Manchester Ship Canal. Commercially you may compare Ghent, the seat of the cotton industry in Flanders, with Manchester; the Escaut and the Lys with the Irwell and the Medlock, Terneuzen with Eastham, the Scheldt with the Mersey, and Antwerp with Liverpool; and there you have conditions very nearly the same for both canals. So it was natural that the makers of the Manchester Canal should learn something from Ghent, and it is not less natural that the reconstructors of the Ghent Canal should now in their turn have learnt something from Manchester. That they have done so is, we think, shown clearly by the account of the work that is about to be undertaken. In the first place, the canal is to be deepened and broadened, and the depth chosen is the depth of the Manchester Canal. A new basin and piers are to be made at Ghent, and railways are to be laid along both sides of every pier, as they are in Manchester. The locks also are to be enlarged, and they are to be made just about big enough to hold the largest vessels that have been sent to Manchester. The widened Ghent Canal will be not much more than half as wide at the bottom as the Manchester Canal, and deeply laden ships will have to pass at lay-byes or basins. But that, no doubt, has been decided by considerations of expense. The traffic of the Ghent Canal has nearly trebled since the last deepening and widening in 1881. The new improvements, which are to be completed in about five years, should stimulate it even more.

1900-3-12 Manchester Guardian

THE GHENT SHIP CANAL.

In the “Revue Technique” an account is given of the works which are to be carried out for enlarging the Ghent-Terneuzen Canal, and improving the navigation from the Scheldt to Ghent. The port of Ghent, is exceedingly well situated as a distributing centre throughout Belgium for both imports and exports. The rivers Escaut and Lys join at this port, and are connected with a network of interior navigations. The railways extend in all directions, and connect the capital of Flanders with the large towns in the interior of the country, and enable the produce of Belgium to be exported, and the merchandise of over ten countries to be imported and distributed with convenience and despatch. The Ghent Canal is the complement of this system of transport. At one time the only means of water communication between the Scheldt and Ghent was round Antwerp by the river Scheldt, involving a distance of over 100 miles. By the direct line of the Ship Canal the distance is onlv 20 miles. The canal was first constructed in 1823. The depth then was made 14½ft. and the bottom width varied from 65½ft., at the lower end to 26½ft. at Ghent; and a single basin was then sufficient. Between 1870-81 the depth was increased to 21¼ft., and the width at the upper end to $55^{2}/_{3}$ ft. The tonnage increased rapidly after this enlargement, rising from 320,000 tons in 1884 to 760,000 in 1897, thus more than doubling itself in thirteen years. The canal, in its lowest reach, runs through Dutch territory, and in 1891 a joint convention between the two countries was appointed to consider as to the further increase in the dimensions of the waterway, and four years later an arrangement was come to by which the works necessary for the further improvement were agreed to, on condition that the cost was to be entirely defrayed by Belgium. The depth is to be increased to 27ft; an intermediate lock is to be constructed at Sas de Gand, about one-third of the way from the Scheldt, and the entrance lock at Terneuzen is to be made so that vessels of average tonnage may enter at all states of the tide. The intermediate lock is to have a 69ft. opening, and a length of 460ft.; and that at Terneuzen to have an opening of 51½ft. and the same length. The sill is to be 25ft. below the canal water level, the outer sill being 17ft, below mean low water in the river. The bottom width of the canal is to be increased to 65ft., and at the surface 219ft. The slopes are to be 3 to 1 below the line of flotation, and 1½ to 1 above this, and be protected by revetments of grooved and tongued timber planks tied back to piles 15ft. long, driven 24½ft. back. A basin is to be constructed above the entrance lock, 870 yards long and 328ft. wide, with a depth of 24ft.

At Ghent, where there are now four basins, having an area of 74 acres, with a length of quays of 2¾ miles, a new basin is to be constructed 754ft. long and 590ft. wide, with 26¼ft. depth of water. On one side five jetties, 1,640ft. in length, and 590ft. wide, are to project at an angle of 75 degrees from the quay, the water space between the jetties being 460ft. The railway sidings are to run down each side of the jetties, and be connected with the line running along that side of the dock. It is expected that from four to five years will elapse before the whole of the works are completed.

1900-6-18 Journal of Commerce

Opening of an important waterway for Germany

A SECOND MOUTH FOR THE ELBE.

The approaching opening of the Elbe-Trave Canal will be a further important step in developing the waterways of Germany. The canal will be equivalent to a second mouth of the Elbe. one communicating with the Baltic. The canal leaves the Elbe at Lauenburg, and reaches the Baltic by way of Luebeck, having a total length of 41 miles. The cost was £1,250,000. The capacity of the canal extend to boats of 300 tons burden. The canal, it is understood, will prove of vast benefit in promoting the trade of the Elbe Valley with Baltic ports, and German exports to Scandinavian countries and to Rusaia will be increased by it.

1900-11-22 Fairplay

GERMAN INLAND WATER COMMUNICATIONS.

THE Germans have succeeded in turning their rivers and streams into alimentary canals for feeding the seaports with the trade upon which they flourish. All their watercourses have been rendered fit

for navigation—the least of them, equally with the largest, performing their part in the general movement of inland navigation. The volume of traffic increases year by year, and on the Elbe alone (to take only one example) it grew in the space of twenty-seven years—1871 to 1898—from 675,000 to 5,137,000 tons for the year. In Germany the waterways have not had the life crushed out of them by the weight of the railway interest, as is unfortunately the case nearer home; there they are regarded as a powerful auxiliary of the railways, developing the industrial prosperity of the country and adding to, not lessening, the land traffic. One consequence of this mode of regarding the subject is that points of contact and easy means of transferring merchandise from the railways to the waterways and vice versa are multiplied wherever it is possible—a policy the reverse of that in vogue among a people who would resent being considered less business-like than the Germans. The tonnage borne upon the River Elbe, although very considerable, as we have seen, is a good way behind that of the Rhine. Travellers making the classic trip down the Rhine from Mayence to Cologne are struck with the formidable movement of boats proceeding to or from their ports of call on that river: Ludwigshafen, Basle, Kehl, Mannheim, Mayence, Albrich, Bingen, Coblentz, Cologne, Bonn, Düsseldorf, Ruhrort, Emmerich, Rotterdam; and the movement is still further increased by the craft passing into or out of the principal affluents of the big river: the Main, the Moselle, the Neckar, and the Ruhr. The traffic is enormous, that of one port alone (Emmerich, near the Dutch frontier) totalling up in the course of the year to something like twelve million tons. It is this brisk Rhine navigation whichkeeps Rotterdam in her position of second (after Hamburg) among the North Sea ports. Further north a growing German port—Emden—is attracting to itself an immense traffic from and to the interior by means of the Dortmund-Ems canal, opened only a few months ago, along which can pass, to and from Dortmund, lighters of 1,000 tons burthen. Dortmund is the principal town in the coal and iron districts of Westphalia, and the movement of merchandise passing down the new waterway into the Ems for transhipment at Emden, and the large quantities of coal imported from England and transferred to lighters for the supply of the Westphalian foundries, cannot fail to make of Emden a vast commercial port. To a great extent this will be at the expense of Rotterdam and the Lower Rhine, in which direction most of the Westphalian traffic went formerly. The present German Emperor has taken great pains to foster and encourage the multiplication and improvement of inland waterways. The ceremonious inauguration of the North Sea and Baltic Canal a few years ago is now a matter of history, and since that event—this year, indeed— there has been opened to traffic a canal starting from Lubeck, on the Baltic, and connecting with the Elbe a few miles above Hamburg. By means of this communication Lübeck, which is the destination of numerous cargoes of Swedish, Finnish, and Russian produce, is connected with the great artery of the Elbe. Another great and favourite scheme of the Emperor's is the creation of a navigable way, connecting from eastward to westward, in the middle of their courses, the great rivers of the Empire—the Vistula, the Oder, the Elbe, the Weser, the Rhine. The agrarian party, strong in the Reichstag, has hitherto successfully opposed this project, but few Germans believe that this party will be able to do more than delay the execution of the scheme for a very few years. Lastly, another important project, and one fertile in results for the future, has been the subject of serious study in high places in Germany. It is the bringing of North Germany into water communication with the Danube and Eastern Europe. There are two ways by which this might be accomplished: Firstly, by way of the Elbe, Moldavia as far as Prague, and through the mountains of Southern Bohemia—this would be the most costly; secondly, by way of the Oder, across Silesia and Prussian Poland. And who shall say that in a country so thoroughly disciplined and so strongly governed as the German Empire, even such a vast scheme as this will not be realised?

1901-4-13 Manchester City News

IN FAVOUR OF CHEAP INLAND TRANSPORT.

For some months the question of the commercial position of Great Britain in regard to foreign competition has received particular attention in many magazines and newspapers. Series of articles have appeared under various titles suggestive of our decline, and many proposals have been made

how to combat foreign competition more successfully than at present. In the March number of the New Liberal Review, for instance, there was a symposium headed, How are we to maintain our commercial supremacy? Nine writers took part in the discussion, and some scores of suggestions were made of more or less impracticability of adoption or of doubtful value. One writer, Mr. A. J. Wilson, editor of the Investors' Review, however, drew attention to one phase of the subject which will acquire increasing force in the near future, namely, that of cheaper and speedier means of transport between our industrial and distributing centres and the sea. Two instructive articles on the same sort have also appeared in recent issues of Commercial Intelligence, a journal "devoted to the interests of British trade at home and abroad," in which we are told what vast works have been undertaken on the Continent and in the United States and Canada to cheapen internal communication by means of deepening and straightening rivers and canals. The French Government alone has spent forty billions sterling on this work since 1877, and there are now hundreds of miles of connecting waterways throughout France free of tolls, deep and wide enough to be used by coasting steamers such as those engaged in our own coasting trade. The same process has been going on in Germany, Austria, Belgium, Denmark, and other countries, with the consequence of a general reduction in all charges for internal transport. Instead of canal rates being raised to the level of railway rates as in Great .Britain, railway rates have come down to canal rates. The results of these great developments are that the manufacturing and agricultural districts on the Continent are practically brought nearer to our distributing centres than are our own industrial districts. Hence we find that Austria and Roumania can land in this country flour, barley, and other food stuffs in millions of hundredweights cheaper rates than our own agriculturists; that Belgian and German manufacturers in metals, such as rails, girders, and the like, can beat our own ironworkers in prices; and Denmark and France can land in London and other British ports and distributing centres, up to forty millions sterling worth of farm produce a year at lower rates than our farmers can whose lands may be only twenty as fifty miles distant.

The question of cheaper internal transport for goods is not a new one in Manchester. It was the necessity of breaking through the tyranny of excessive railway rates which gave rise to the idea of a Ship Canal between Manchester and the sea nearly twenty years ago. It is true we had a waterway, the Bridgewater Canal, upon which some forty years ago goods could be conveyed between Manchester and Liverpool at about one-third of the existing railway rates. But the undertaking was captured by the railway companies, and at the time of the inception of the Ship Canal scheme the rates by rail and canal were identical. At that time, in the early eighties, Manchester, Salford, Stockport, and other surrounding towns were entirely in the grip of the railway companies. Great industries were either closing altogether or taking flight to seaports, throwing thousands of workers out of employment or taking them elsewhere. In 1882-3 there were empty dwellings in Manchester and Salford sufficient for a population of 80,000 people. The advent of the Ship Canal has wrought a wondrous change. Liverpool charges have been repeatedly. reduced, owing to the competition of the Canal, and railway companies have followed suit. The saving to the community, of which Manchester as the centre, may safely be put at several millions a year, probably three or four millions directly and indirectly. Whatever the total amount of savings may be four-fifths would have accrued from the general reduction of charges on goods which have not passed over the Canal, but have been conveyed by rail from the sea to Manchester and surrounding towns, because of the reduced rates.

So far the Ship Canal has achieved many of the anticipations, of its founders, but more remains to be done if the undertaking is ever to get on a paying basis and manufacturing centres in Yorkshire, Staffordshire, Warwickshire, and elsewhere are to derive benefit themselves and contribute to its success. The figures relating to the tonnage using the Canal last year are suggestive of the directions in which increased business might be obtained to the benefit of all concerned. The total traffic was 2,700,000 tons, of which only 1,1150,009 tons were exports. Leaving the imports on one side, the figures of the exports show that the Canal is getting only about four hundred thousand tons, other than coal and salt, commodities which do not come near the Manchester docks. Salt comes from the River Weaver and coal as loaded chiefly at Partington. Analyzing the four hundred thousand tons

nearly the whole is purely Manchester traffic—textiles, machinery, and pitch being nine-tenths. The total is, however, not one-tenth of the tonnage carried by any one of the railway companies between Manchester and Liverpool. In the items of the exports we cannot see any traffic from Yorkshire towns and the Midlands.

The reason for this anomalous condition of affairs is that the canals connecting Manchester with other manufacturing districts so far distant as Leeds, Birmingham, Sheffield, and intervening towns, are all leased or under the control of the railway companies. The rates are the same, the services bad and slow, and the traffic unregarded by the companies. The Manchester, Bury, and Bolton Canal may be cited as an instance. This excellent waterway which connects the busiest towns in Lancashire, enters the Irwell almost opposite Pomona Docks, but one may walk boors on its banks for miles and only see narrow coal boats drawn by horses conveying coal to the great railway depots in the neighbourhood of Oldfield Road, Salford, and a few factories on the route. So far as the communities watered by this Canal are concerned they are deprived of the advantages of cheap carriage by water which ought to be not more than one-fourth of the railway rates, and they also lose the advantage to that extent of being near to the cheapest seaport in the kingdom. The same may be said in regard to the other canals which connect Man- chester with the other districts. The Ship Canal has been so little use to Staffordshire and Birmingham district that there is a movement, in the latter city to have direct communication with the sea by way of the River Severn, at a cost of many millions of money.

No other country in the civilised world would submit to have its 5,000 miles of waterways captured by railway companies as ours have been, and be practically thrown into disuse. If our industrial and agricultural districts are to be put in a better position to supply our own wants and retain our foreign trade, there must be much cheaper means of inland transport. Our waterways and rivers will have to be dealt with on the Continental, Canadian, and American system. How this is to be done must be. left for another occasion, together with suggestions for improved means of conveyance.

1901-4-6 Journal of Commerce

A PLEA FOR CHEAP TRANSPORT.

[From the "Commercial Intelligence."]

Nothing in the modern economy of trade and industry is more remarkable than the ample provision that is being made by the leading countries of the world, excluding our own, for increasing and cheapening the facilities for transport. This movement is equally apparent in railways and waterways, the but on the present occasion it is our intention to limit our observations to waterways, as being a means of transport which we in Great Britain are too apt to neglect and disregard. This tendency would not be of so much account if our railway transport was all that it should be, in order to enable us to stem the rising tide of competition in industrial affairs.

But when we remember that our railway rates and charges are about the highest in the world on a large scale, that our railways have been far and away the most expensive, that our ways of communication are entirely in private hands, and that there appears to be no prospect of getting relief from the railway companies themselves, the neglect of our canal system is difficult to understand and appears to be inexcusable.

Let us begin by looking at the state of affairs on the Continent of Europe. Our nearest neighbour, France, has done a great deal within recent years to improve and extend its canal system. In 1877, at the instance of M de Freycinet, then Minister of Public Works, large extensions of the existing canals were carried out at a cost of more than thirty millions sterling. The principal canals were deepened an as to be able to take much larger vessels. The general effect of this movement was to allow vessels of twice to three times the tonnage to navigate the leading waterways. One or two examples may be cited. The Roubaix Canal was adapted to take vessels of 260 instead of 84 tons; the Haute-Colme, vessels of 278 instead of 113 tons; the Bourbourg Canal, vessels of 1,189 instead of 512 tons; the Neufosse Canal, 1,767 instead of 793 tons; the Haute Deule Canal 2,046 instead of

1,014 tons; and the Seusee Canal, 3,334 instead of 929 tons. The effect of the improvements thus carried out has been to materially increase the traffic carried on the French waterways, and to enable the charges to be materially reduced—in some eases as much as 40 per cent. A very common charge on French canals to-day is .013 centimes per ton-kilometre, which, of course, is much below any transportation rates that are known in our own country. The traffic carried is considerable, the total movement in 1899 having been 495 million ton-kilometres, and it is increasing largely every year, despite the low rates quoted by a number of the principal railways.

Germany, however, has made an even better record than France as a canal builder. The North Sea and Baltic Canal, and the Dortmund-Ems Canals, are enterprises of which any nation may be proud. The total length of navigable waterways throughout the empire is about 7,366 miles, of which 1,389 in canal or canalised river. The Government of Germany, like the Government of France, have developed their waterways with enterprise and liberality, with a view to facilitating transport of bulky goods, such as coal, iron, steel, and certain agricultural products. The total sums voted by Germany for inland navigation between the years 1880 and 1894 was over 11½ millions sterling, and since 1894 several millions more have been expended on the Dortmund-Ems, the Ems-Jade, and other canals In Germany, as in France, most of the canals, until a recent date, could only allow of the navigation of small craft for any considerable distance, but the activity of the Prussian Government, which controls 66 per cent. at all the waterways of all the waterways of the empire,has entirely altered this condition of affairs The rivers have been regulated, the canals have been deepened, feeders have been provided, and the system as a whole has been modernised and improved. Again, in Germany, as in France, this policy has been attended by a remarkable increase of canal traffic and by a material abatement of transportation charges, although the German railway charges were already little more than one-half of these generally quoted in our own country. We do not overlook the the importance in this connection of the North Sea and Baltic Canal, finished in 1895, at a cost of 71 millions sterling, which has unquestionably increased the facilities possessed by our rivals for the development of their foreign as well as of their domestic trade. But the canal era has also had a renaissance in the United States which we cannot afford to ignore, and which is likely to exercise a very important influence on our foreign trade in the not too distant future. We do not speak at present of the projected Nicaraguan Canal, about the ultimate construction of which some people still appear to have considerable doubts, and which, in any case, is not likely to take less than six years to complete. Nor do we refer to the St. Mary's Falls Canal, connecting the great lakes, although this short waterway has the largest traffic of any canal in the world, not even excepting that of Suez. We speak of the various schemes now being promoted or under consideration designed to connect, the iron-making .districts of the Southern States with the sea, and to connect Pittsburg and Lake Erie with tidewater at New York or via the St. Lawrence river. It has for a considerable time past been proposed to widen and deepen the Welland Canal and the other waterways that connect the St. Lawrence with Lake Erie, so as to get ships right through from that inland sea to the Atlantic without any breakage of bulk. The economy thus secured would, no doubt, be material. At the present time, the rate for the carriage of traffic like iron and steel from Pittsburg so the sea is about 8s 6d per ton, and there is, beside, the cost of breaking bulk, harbour dues, and other charges at New York. If the existing waterways were so improved and deepened as to render the charges unnecessary, the effect would probably to place the Carnegie Company and other manufacturers in that region in a position to land their products from 5s. to 6s. cheaper in Europe in the item of transport This, at least, is the object now being aimed at, and if we know anything of American push and determination, it is one that is extremely likely to be carried out before the world is much older.

Against these important developments what have we to show in our own country? It must be confessed that there is very little. Some years ago the Staffordshire traders, who make use of canal transport to a larger extent than perhaps those of any other district, under the Birmingham Canal Order Conformation Act, were able to secure abatement of about 6d a ton on coals carried into Birmingham from the Dudley and Cannock Chaos districts, and the Aire and Calder Navigation have made concessions to shippers from the port of Goole but we know of little else. No enterprise

is being shown in the same directions as in France and Germany, still less to equal the large schemes of improvement projected in the United States. A large part of our canal system, which might be utilised at a small expenditure, continues derelict. Railway companies, the natural enemies of inland waterways, have acquired and retained control of one-third of the entire system. The Manchester Ship Canal turned out such a very costly enterprise that the British public are afraid of facing the construction of further canals of that character, although the Baltic and North Sea Canal, a much more important waterway in some respects, and nearly double the length—it is 62 miles long-- was built for under eight millions sterling, or about £130,000 per mile. What we now require is to have a complete inquiry into the whole question of British canal navigations as affecting the cost and the conditions of transport. We believe that there is some talk of a Commission to investigate the subject of canal traction, but that is not enough. It is necessary to begin at the foundation, and in order to do that, our waterways require to be deepened, widened, and modernised all round. The Canal Committee of twenty years ago did not do much more than touch the fringe of the subject. Since that time, the necessity of cheap transport has become much more urgent, and the difficulty of getting it has appeared to be more remote.

1901-4-29 Manchester Courier

NEW ISTHMIAN CANAL TREATY

A DRAFT IN PREPARATION.

Our New York correspondent cables that there has been another conference between Lord Pauncefote and Secretary Hay, necessitated by the departure of the President and Cabinet on their Western tour next Tuesday, and the desire of the President to see the negotiations as to the new Isthmian Canal Treaty take definite form before he leaves.

There is, according to the latest information from Washington, a definite draft of the coming treaty prepared by Lord Pauncefote's and Secretary Hay, which has been submitted to the President, but which will be subjet to long diplomatic communications between the Governments.

The President and his colleagues, who will accompany him in his tour, cannot be back in Washington till about the 15th June, and Lord Pauncefote is to delay his holiday sojourn in England until be can take with him the perfected draft of the new Treaty.

1901-4-27 Manchester Courier

ISTHMIAN CANAL QUESTION.

PROSPECTS OF THE ANGLO-AMERICAN TREATIES.

Reuter's correspondent at New York says that with the prospects of the newly projected Nicaraguan Canal Treaty it has been learned that the British Government is not yet in possession of data which would enable it to judge with any accuracy the probable attitude of the American Senate towards a new Treaty, to the pourparlers that have been proceeding in Washington between Mr Hay and Lord Pauncefote, the British Ambassador has maintained that British interests render the neutrality of the Canal essential. If the Senate can be brought to agree to this proposition it seems probable that with but little further discussion Great Britain will assent to the abrogation of the Clayton-Bulwer Treaty and the negotiations of a new Convention. Should the Senate refuse to agree to a neutral Canal it is possible that the negotiations may hinge upon other matters, more especially upon the Alasker boundary question, the discussion of which, it will be remembered, immediately preceded the Hay-Pauncefote Treaty.

1901-4-29 Manchester Courier

AUSTRIA'S CANAL SCHEMES.

TWENTY YEARS TO COMPLETE THEM.

A Waterways Bill has been laid before the Lower House of the Reichsrath, proposing to construct four canals, in the Danube, Moldau, Elbe, and Vistuladistricts. The work is to be begun in 1904, and to be completed in twenty years.

Funds for the purpose are to be raised by a loan bearing interest at 4 per cent, redeemable in ninety years. The Government is empowered to issue a maximum sum of 250 million kronen between 1904 and 1912. Further funds will be raised by a special law.

1901-7-24 Liverpool Mercury

A CANAL BETWEEN THE BALTIC AND THE ARCTIC OCEAN

The plan of connecting the Baltic with the Arctic Ocean by means of a tonal is a very natural one, inasmuch as them is no doubt that in former days there existed a waterway connection between the two oceans, of which the belt of lakes between the Finnish Gulf and the Onega, in the western portion of the White Sea, bears unmistakable testimony, these lakes being only separated buy a low-lying land, through which run a number of small rivers. Considering the distance to be compassed, the canal in question will probably offer but few difficulties, nor will the cost be out of proportion. Apart from the commercial importance, a canal between the Baltic and the Arctic Ocean will have an immense strategical value, as it will supply the Russian fleet in the Baltic with an independent means of exit in case of complications with the West European Powers. The political importance of such a canal has been further enhanced by the new port of Alexandrovsk, which has been constructed on the Marman coast in the Kola Bay. This naval port can accommodate the largest war vessels, and is, owing to the Gulf Stream, almost ice free. It goes without saying that the two—the port of Alexandrovsk and the canal referred to—supplement each other, provided the latter is made sufficiently wide and deep. From the Finnish Gulf, the Neva, varying in depth from 10ft to 23ft, leads to the Ladoga Lake, which, by the River Tivir, is connected with the Onega Lake. The Tivir is between 140 and 150 miles long, and is already in its present state navigable for smaller vessels; it can, comparatively easily, be transformed into a big-ship canal. The Onega, which is in places 370ft. deep, is, in a way, already connected with the Arctic Ocean by small lakes and rivers, the natural conditions being extremely favourable for the making of a canal of considerable capacity. Only a small number of looks will be necessary. The terminus of the canal at the White Sea will be at Sorozkaja, on its western coast, The entire distance between St. Petersburg and Sorozkaja is very nearly 600 miles, of which rather more than half—viz. 306 miles—is through the lakes, and 295 miles through rivers, which are being regulated. Through the canal the distance between St. Petersburg and the port of Alexandrovsk, on the Marman coast, amounts to some 1090 miles, whilst the distance round Scandinavia is 2870 miles. Although it is no doubt principally political motives which have caused this canal to be constructed, it will undoubtedly also become an important part in commerce, and prove an outlet for several of the towns on the borders of the White Sea. It is also expected that a large portion of the grain traffic of the Volga district to the White Sea will go to the canal, in preference is the present system of passing through the Ladoga and various rivers and lakes, which system entails no small amount of reloading, &c,—."Engineering".

1901-7-26 Daily Mail

UNDER LONDON BY CANAL.

A Journey with Which Few Persons Are Familiar.

Nearly everybody nowadays is familiar with underground travelling by rail, but there are comparatively few people who have done a six or eight miles' journey underground by water.

Yet the facilities for such a journey—at any rate, so far as London is concerned— have been in existence very much longer than the oldest underground railway.

It may come as a surprise to thousands of persons who are thoroughly familiar with the Agricultural Hall to learn that far beneath that famous building a ceaseless stream of barges laden with valuable merchandise daily winds its way.

While idles, pleasure seekers, and busy men are passing to and fro above, these barges are slowly working their way through the dark waters of that part of the Regent's Canal, known as the Islington Tunnel.

The idea of a canal from Paddington to Limehouse originated in 1802. But the scheme lay fallow for some years, and it was not until 1811 that the secretary of the company received an intimation from George the Fourth. then Prince Regent, that he, to quote the words recorded in the company's books, "approved of the formation of the canal and graciously condescended to allow it to be called 'The Regent's Canal.' A year afterwards the first special Act of Parliament was passed, and in eight years more the long-projected venture was an accomplished fact.

The total length of the canal, including its occasional side issues, is ten miles. One end joins the Thames at Limehouse. The other runs into the Grand Junction Canal at Paddington, the two longest tunnels being at Islington and Maida Vale respectively. Well-nigh a quarter of a century ago a barge laden with gunpowder came to grief while passing that part of the canal which traverses Regent s Park. There was a terrific explosion, entailing great damage and some loss of life, and this misfortune was the cause of certain restrictions which, while modifying the chances of disaster, also curtailed the opportunities of bargees who used to do the voyage to Liverpool and back in eight days. They invariably used the type of vessel colloquially termed a 'monkey barge,' and even to this day the men who work this type of barge are called "monkey men."

Having previously arranged with the engineer who has charge of the engine used for towing the boats through the Islington Tunnel, writes a " Daily Mail " explorer, I went to the Caledonian Bridge entrance of the tunnel to wait the promised opportunity of stepping on hoard. On one side of the entrance is a bank of greenery, while opposite is the towing-path, with its system of signals, which block the entry of one barge until the tunnel is clear of any others. There were several barges waiting to go to through, but one bargee, more impatient than the rest, resolved to "push on" rather than wait to be towed, and the engine, which had now presented itself, backed a little to give the barge room to pass it. We wondered how the bargees would get their vessel through; but they soon solved the mystery. They secured two planks to iron rings in the deck, and made them project at right angles to the barge. They then lay at full length on the boards, and, just as they began to he swallowed up in the thickness, they pushed their craft along by using their feet as propellers against the walls.

The engine which usually tows the boats looks for all the world like a railway engine mounted on a platform, and it is drawni along by means of a steel hawser, which winds itself round two huge drums placed on the engine platform at a distance of about eight feet apart. When it came to my turn to go through, I asked the engineer what would happen if the hawser broke.

"Ah, there, now you have meet" he replied with a laugh. " I'm helpless if the rope breaks, and if I'm in the middle of the tunnel, why then somebody has to come and pull me out. I've been knocking about this tunnel twenty-one years, and I'm not sure that I didn't like the old engine better than this.

It worked on a chain, and if a link broke I could mend it in two or three hours. But if our cable breaks it takes two or three days to put it right, for we can't splice it. See that white mark? It marks half-way. You're just under Chapel-street now, and the Agricultural Hall is a bit further on.

Above one part of of the underground canal water drips from the roof. It comes from the New River, which leaks into the canal, suggesting serious possibilities in the way of a deluge one day, though I am told there is not much danger.

1901-8-20 Liverpool Courier

PROPOSED CANAL BETWEEN ROSTOFF AND THE SEA OF AZOFF.

The proposed construction of a deep canal between Rostoff on the Don and the Sea of Azoff mentioned in my telegram of the 13th inst., telegraphs the Odessa correspondent of the Times, possesses considerable interest for British shipbuilders. The idea of establishing a navigable waterway for vessels of average draught to the prosperous town on the Don is not new, but the

Russian Ministry of Ways of Communication has hitherto been unable to give that attention to the question of making Rostoff a port which the Don River Commission has persistently pointed out that it deserved. It would appear that a better late awaits the proposed canal than that of its predecessors. At any rate we are assured on what seems to be very good authority that the Russian Minister of Ways of Communication is himself a warm supporter of the project in its present form. In the course of his recent inspection of the waterways of Southern Russia, Prince Khilkoff spent some time in Rostoff, where he discussed the project at length with the Don River Commission. The project provides for a fairway with a minimum depth of 18ft., which the promoters consider sufficient to allow even large vessels to come up to Rostoff and leave with at any rate a two-thirds cargo. The assumption is that the majority of outgoing vessels would adopt the practice followed by steamships using the 19ft. 6in. waterway to Nikolaieff. and call at Odessa or other Black Sea ports for complementary cargo. The promoters argue that, if the transaction pays in the case of vessels leaving Nikolaieff, it should pay in the case of vessels leaving Rostoff. The cost of carrying out the project as it stands is roughly estimated at 1,000,000 roubles, practically the whole of which would be spent on dredging operations. Prince Khilkoff has expressed himself in thorough accord with the project, and has promised to exert his influence in St. Petersburg in its favour.

1901-8-24 Manchester Guardian

THE NORTH SEA-BALTIC CANAL.

The development of the traffic through the North Sea-Baltic Canal during the five years it has been open, is shown by the following table:-

	Vessels	Net Reg. Tonnage	Annual increase in Tonnage in Per Cent
1898	20,068	1,761,665	
1897	21,904	2,345,849	33.97
1898	25,224	3,000,911	28.27
1899	25,524	3,451,273	14.70
1900	29,571	4,292,258	24.37

The international traffic represented in 1896 81.20 per cent, a figure which had risen to 89.44 per cent in 1900. On June 15, 1900, 118 vessels, with an aggregate tonnage of 20,64 tons, passed through the canal. The German armoured cruiser Prince Bismarck, a triple-propeller ship with 28ft. depth in water, and the Japanese armoured cruiser Yakuno, of more than 24ft, depth in water, have passed through without any, difficulty and without being lightened; whereas the Prince Bismarck has to be brought down to 25ft. depth in order to pass through the Suez Canal. Nor has ice stopped the traffic, whilst as late as 1897 the Sound and the Baltic had trouble with ice. The returns of the traffic through the canal do not include the German warships. (Engineering)

1901-9-5 Glasgow Herald

WATERWAYS AND MARITIME WORKS

The Section which deals with Waterways and Maritime Works devoted their meeting to the consideration of river works. Sir John Wolfe Barry, K.C.B., the chairman, again presided.

Proposal to Connect the Baltic with the White Sea.

Professor Timonoff, St Petersburg, contributed a paper in which he outlined a scheme for an inland waterway between the Baltic Sea and the White Sea. He advocated the opening of Lake Ladoga to maritime navigation, the advantages of which to national and international commerce, he said, would he enormous and out of all proportion to the slight outlay required. The opening of Lake Ladoga to the mercantile marine, though important in itself, would only be the first stage in carrying out the great scheme of connecting the Baltic with the White Sea by means of an intend waterway.

The two other stages would to to deepen the river Svir, and to open Lake Onega to maritime navigation, and to connect Lake Onega with the White Sea by means of a ship canal. The author's scheme fulfilled two important objects. In the first place, it would give the Russian navy a freedom of action it did not possess at present. If the project were carried out, the Baltic fleet would be in a position to steam to any part of the globe at a few days' notice. before any obstacle could he placed to impede it. This would very greatly increase the political influence of Russia. From this point of view, the realisation of the author's scheme would appear to be the indispensable complement of the Trans-Siberian Railway. The prestige of Russia, and the magnitude of its interests in the Far East, rendered it imperative that its naval forces should no longer be liable to be imprisoned in the Baltic. The other object which would be attained was the industrial and commercial development of Northern Russia. The new waterway would certainly be an important route for conveying to Europe the wood, coal, naphtha, iron ore, and other riches abounding in the northern provinces of Russia. New industries would also be started to develop these resources on the spot. The whole commerce of Europe would benefit by this scheme.

In the course of the discussion which followed, the third conclusion stated by the Professor, that it was desirable that the seas on the coast of the same country should be connected by deep navigable waterways passing through the country, was specially referred to.

The Vice-Chairmen, Mr W. H. Hunter, Manchester, mentioned that he had been associated with a project for uniting the Forth and Clyde by means of a waterway; which would have enabled the largest ironclads in His Majesty's fleet to pass from coast to coast in this country. That seemed to be a case in which the third conclusion absolutely applied. A very moderate amount of assistance from the Government would have carried the scheme through; but the Government, tied by the condition of public feeling, would do absolutely nothing, and the project fell through. It was one of the many, unhappily, numerous examples in which traditions and the habits of our forefathers were hindering development and hampering enterprise as this country. Russia, Germany, or France would have constructed the canal.

Baron Quinette de Rochemont, Paris, and other members also took part in the discuasion. The Chairman, in moving a vote of thanks to Professor Timonoff, said that he had alluded to the criticisms of the advisability of making the Suez Canal. He (Sir John) pointed out that the objections, from an engineering point of view, were based upon defective levels, which had been supplied from a survey made many years ago and relied upon. The great commercial success of the Suez Canal rested entirely upon the extraordinary development of steam navigation. If that development had not taken place, he was bold enough to-say the Suez Canal would not have been the great commercial success it is. It was very interesting that Professor Timonoffe had brought forward his scheme in Scotland, because one of the earliest works of connecting two seas was constructed in Scotland—the great Caledonian Canal—by Telford to whose skill and to the enterprise of our forefathers who lived 100 years ago that work was a monument. It was a most extraordinary work at the time it was executed; but, like many other undertakings of the kind it was not a commercial success, and it was now practically useless for the passage of ships of war. Its commercial success was nothing at all, and had it not been for the action of the Government taking over the canal, it would have been allowed to go to ruin. It was now only kept up at a considerable annual sacrifice by the British Government. Therefore, one must be careful in looking ahead either if to see commercial results of these great enterprises or as to their utility for ships of war. When the Caledonian Canal was designed provision was made for the size of warships of the period, but they had entirely outgrown the canal. On general principles, and speaking as engineers, it was very interesting to them to join seas; but the question had, of course, to be considered from the point of view of utility. The natural features of the country seemed to point at once to the work proposed by Professor Timonoff, and he was sure they all wished him success in the prosecution of his enterprise. (Applause)

1901-9-10 Liverpool Post

German Inland Water Transport.

“Engineering" states that in 1877 the German river, canal, and coasting. vessels numbered 570 steamers, aggregating 31,000 tons, and 17,083 sailing boats and barges, of 1,350,000 tons. By 1897 the number of steamers hod been more than trebled, there being 1,953 steamers of 164,000 tons, and 20,011 sailing vessels of 3,270,000 tons.

1901-9-12 Liverpool Mercury

NEW CANAL FROM BRUGES TO THE SEA

A BIG ENTERPRISE.

Good citizens of the old town of Bruges are making strenuous efforts, with the aid of the Belgian Government, to restore to their ancient city something like its mediaeval prosperity. A deep-water canal is in course of construction from Heyst, on the North Sea coast, a few miles east of Ostend, direct to Bruges, a distance of twelve miles. It will be of 26½ft. minimum depth, and of width sufficient to allow the passage of vessels of the largest tonnage from the outport by the sea to, the new port of the old city. The total cost. is estimated at 39,969,078 francs, of which 95,000,000 is subscribed by the State and the remainder by the concessionaires, the Maritime Installation Company of Bruges, and by the municipality, citizens, and the province. Quays, jetties, and all the requirements of a first class port are in course of construction, and it is announced by the company that the ports of Heyst and Bruges will be open for traffic in 1902 or 1903. A sum of over 20,010,000 francs has already been expended on the works up to 30th of June, 1898, and a corresponding proportion of the capital has been brought into use since that date.

1901-9-25 Shipping World

THE BALTIC CANAL—The number of steamers which passed through the Kaiser Wilhelm Canal in July was 1,355, of an aggregate burthen of 332,950 tons. The number of steamers carrying cargo was 1,041, of an aggregate burthen of 303,483 tons. The remainder of the steamers which passed through the Canal in July were in ballast only.

1901-9-25 Liverpool Courier

THE BALTIC CANAL—P R. D. The Baltic and Nonth Sea Canal, which was opened early is 1891 by the Germaqn Emperor, starts at Holtenau on the north side of Kiel Bay, and joins the Elbe fifteen miles above its mouth. It is 61 miles long, 200 feet wide at the surface, and 85 feet at the bottom, the depth being 28 feet. The cost is estimated at eight millions sterling. The advantages gained for the Baltic trade, apart from the dangers of the old journey by the Skagerrack and the Kattegat, are said to be immense, the saving of distance alone being for a journey to the Thames 250 miles, to Lynn or Boston 220, to Hull 200, to Newcastle or Leith 100.

1901-9-30 Manchester Guardian

CANAL BURST AT BIRMINGHAM

SERIOUS DAMAGE TO PROPERTY: NARROW ESCAPES.

An arm of the Birmingham and Wolverhampton Canal burst at Birmingham early on Saturday morning, and caused great destruction of property, but fortunately no loss of life. There were, however, several marvellous escapes. In Newhall-street, which is in the centre of the city, and not far from the Town Hall, the canal terminates in a wharf, and during the past, week some excavations have been going on there. It is surmised that these weakened the embankment, which gave way. The water poured out with terrific force, widening the breach every second. The excavations were soon filled, and the water carried walls and buildings before it. It rushed into Fleet-street, thence into Newhall-street, flooding Messrs. Elkington's works on the way, along Charlotte-street and Lionel-street, and flooded the streets and cellars for a considerable area around. A caretaker at the Midland

Loan Company's premises was awakened by the rush of the water, and by means of a whistle summoned the police. The ordinary means of escape were, cut off, and he and his wife and six children were rescued through the bedroom window, and they had scarcely left the house before it was washed down. A number of other exciting rescues took place. In one house the police found a man asleep in sa downstair room upon a bed which was floating on the water. As soon as possible the escape of water from the canal was stopped by the closing of lock gates, but not before damage amounting to several thousands of pounds had been done. The macadam of streets was torn up and footpaths destroyed, and all day on Saturday and yesterday Corporation workmen were engaged in filling up holes and carting away debris. Two fire engines were also continuously employed in pumping water from flooded cellars and factory basements. At many places of business work was stopped and the electric supply to the jewellers' quarter of the city was cut off owing to the water having entered the cable tunnels. The electric lighting works of the Corporation suffered considerably, as the whole of the basements and ground floors were submerged. Cellars of public-houses did not escape, and barrels of beer floated about and were destroyed.

1901-12-28 Manchester City News

INTER-NATIONAL CANALS: IMPORTANT SCHEMES.

The opening of the Kiel Canal, remarks a London contemporary, gives a new impetus to the imagination of the engineer by joining the German Ocean to the Baltic, and the imperial creator of the "strategic ditch" which transforms Denmark and Schleswig-Holstein into an island at once came forward with another design for uniting the Elbe, the Weser, and the Rhine. That particular scheme has become the prey of politics and for the present remains in abeyance, but the Emperor has evolved a powerful coadjutor, who puts forward a somewhat similar proposal for Southern Germany. Prince Ludwig of Bavaria, son of the Regent, aspires to see his country "connected with the Rhine by an ample waterway," and even looks forward to the ultimate internationalization of canals and rivers as fully as the ocean highways are at present.

Going still further south we find the canal craze— for in some of its developments it amounts to that--equally active in Austria. A preliminary Bill was laid before the Reichsrath this year providing for the construction of the following elaborate series of canals:—(1) a connection of the Danube and the Oder from Vienna to Machrisch and Oderburg: (2) a canal front Vienna to the Moldau near Budweis, together with a plan for regulating the Moldau as far as Prague: (3) a link from the Danube and Oder section to the Upper Elbe, and the canalization of that river up to Melnik: and (4) a junction of the Danube-Oder line with the basin of the Vistula and the navigable portion of the Dneister. A beginning of these works is intended to be made not later than 1904, and the expenditure, estimated at seven hundred and fifty million crowns, it to be spread over a period of twenty years.

TRANS-EUROPEAN CANAL.

A far more ambitious, though not perhaps a more costly or more technically difficult, scheme is that for running a canal system right across Europe from the Baltic to the Adriatic, materially shortening the route by the Suez Canal, and establishing direct water communication between the Russian seaport of Stettin and the Hungarian seaport of Fiume. From Stettin, the Oder is already navigable up to Kosel, in Silesia, but from that point it will be necessary to widen and deepen the river as far as Oderburg. A canal is to be cut from Oderburg to the river Waag, which in its turn would be widened and deepened down to Komorn, on the Danube. The course of the Danube would be followed to Vukovar, whence an existing canal runs to Spamatz, on the frontier of Bosnia, and connects the Danube with the Save. The Save would be made use of up to Sissek, and subsequently the river Kulpa as far as Karlstadt, in Croatia. The final link would be a new canal from Karlstadt to Fiume. This elaborate design, for which plans are being prepared by the Hungarian Ministry of Commerce, embraces a continuous waterway of fourteen hundred miles, but the difficulties in the way of carrying out the proposal are by no means proportionate to its length. A thousand miles of the course described are at present navigable and a hundred miles of river could be sufficiently

improved at a moderate cost. Only three hundred miles of new canals would be required, and it is believed that to the construction of these there are no serious technical obstacles.

SHORT CUT TO THE MEDITERRANEAN

An interesting plan is at present under the consideration of the French Government for making a navigable channel from the Bay of Biscay to the Mediterranean. A Parliamentary Committee appointed to investigate the question made an exhaustive examination of the circumstances of the Manchester Ship Canal and of the Elbe-Baltic Canal as presenting the most analogous conditions, and its report states that the execution of the work is quite feasible from a technical point of view. The scheme will now be seriously studied "in all its bearings," that is to say in its financial and political aspects, and, needless to say, these are of a highly important character. It might be supposed that, after their bitter experience at Panama, the French investing public would be inclined to hold aloof from anything in the nature of ship canals. But, on the other hand, an enterprise confined exclusively to their own country would naturally present itself in an attractive light, especially when, as in the present instance, it seems to possess advantages of both a military and a commercial kind. It would so obviously shorten the route from Northern Europe to the East that it would have the effect of practically abolishing the Straits of Gibraltar as a trade channel, and its earning capacity should prove hardly, if at all, inferior to that of the Suez Canal. Strategically it would possess enormous value. The Kiel Canal, by cutting off Denmark, gives the German fleet easy access from the Baltic to the North Sea; and similarly a reconstruction of the old canal through Languedoc would remove the peninsula far more thoroughly than Louis Fourteenth ever succeeded in abolishing the Pyrenees, and place Toulon and Brest almost within touch of each other.

CANADIAN CANALS.

No more pregnant circumstance has occurred recently in connection with what may be termed social geography than the opening up of Chicago to the sea as a result of the wise and far-seeing canal policy of the Dominion Government. Not only has the essential unity of the Great Lakes been established, but they have been placed in touch with the outer ocean, and the St. Lawrence channel must in the future serve as a great national route for trade communication between Europe and the Far West. Competition on the part of the United States is admittedly hopeless, for the Commission of 1896 reported against the construction of a canal from Lake Ontario to the Hudson. On the other hand, the proposed Georgian Bay, Ottawa, and Montreal Ship Canal is expected to drive out of business the "present routes of taking grain from the American (that is the United States) North-West to the sea-board, for cereals will be carried at the rate of three cents a bushel—two cents less than the present charges through the Erie Canal or down the Mississippi River." And Canadian canalization can go even further west than Lake Superior. The rapids of the Red River above Lake Winnipeg are being harnessed by locks and dams, and beyond Winnipeg there is another chain of lakes and rivers to be linked up—by Indian Lake, Wollaston Lake. and Lake Athabasca—to the Great Slave Lake and River, whence the Mackenzie gives direct access to the Northern Ocean,

CENTRAL AND SOUTH AMERICA.

An American Isthmian Canal, whether at Nicaragua or Panama, is of course ultimately inevitable, though its construction may be delayed owing to political issues, to railway jealousies, or even to financial obstacles. All of these difficulties are, however, essentially temporary character, and the early years of the new century are almost certainly destined to witness that junction of of the Pacific and the Atlantic which was dreamed of by Cortez himself. A colossal scheme is suggested for the canalization of the river systems of South America. It is proposed to join together by means of canals the three great arterial rivers of South America--the Amazon, the Parana, and the Orinoco. It is pointed out that the

Amazon is navigable for some five thousand kilometres, almost to the confines of Peru, and that from the estuary of the La Plata there is a through communication to Matto Grosso, in the heart of Brasil. The affluents of these rivers are in themselves important waterways, and a comparatively small amount of canal construction would be necessary to connect the three systems.

1902-1-9 Fairplay, new Canal du Midi

THE CANAL OF THE TWO SEAS.

The great Scheme for cutting a ship canal through French territory to connect the Mediterranean with the Atlantic, which has been under consideration for the last twenty years, and which was considered some time ago to have been definitely shelved, has again been brought within the (sphere of practical projects, M. Honoré Leygues having rendered his report to the Maritime Commission of the Chamber of Deputies on a Bill brought in for authorising the construction of the canal, and upon which he had been requested to draw up a report. M. Leygues recommends that the Bill should pass.

It is proposed that the canal shall be of such dimensions as to permit of the passage through it at all times not only of modern merchant steamers but also of the largest warm vessels. The western entrance into the canal will be from the River Garonne a few miles below Bordeaux, and the cutting will then in general follow the course of the river up to Castelsarrasin on the left bank. From there it will proceed along the right bank of the river, cross the river twice (first to the north and then to the south of Toulouse), then take an easterly direction towards the Mediterranean. It will connect with that sea a little to the south of Narbonne, and here, as well as at the western end below Bordeaux, powerful defensive works will be erected. The whole length of the canal will be 605 kilometres (close upon 376 miles), the depth of water will be 8.5 metres (27 ft. 3 in), and the width on the surface 45.3 metres (40¼ yards). There are to be several passing-places, and at these spots the width for a certain distance will be increased to 65 metres (71 yards). Important harbour w oks will be constructed at Toulouse in connection with the canal, making it possible for a large number of vessels to find accommodation there at one and the same time. The minor details of the plan—as, for instance, the number and dimensions of the locks—have, not yet been made public, but these will probably be the same, or nearly the same, as were provided for in the earliermplan, namely, 22 chamber-locks, each 188 metres long and 25 metres wide.

It is quite clear that this "Canal des Deux Mers" (as it as to be called) will be of even greater utility to France—and primarily to the French Navy—than the North Sea and Baltic Canal is to Germany and the German Navy. The French Northern and Atlantic squadrons will be able to take a short cut into the Mediterranean without the risk and loss of time involved in passing Gibraltar, and in this way the strength of France's position in the Mediterranean will be considerably increased. As regards the usefulness of such a waterway from a commercial point of view, that is not so clear, as a great deal would depend upon the tariff of charges. But the commercial aspect is evidently a secondary consideration.

It is well-known, of course, that there is already water communication through France between the Atlantic and the Mediterranean. This is furnished by the Canal du Midi, which, starting from the River Garonne near Toulouse, proceeds via Castelnaudary, Carcassonne, and Bèziers, to the small lake by the sea known as the Eteng de Thau, and from there past the harbour of Cette to the Mediterranean. This cutting was made between the years 1667 and 1681. It is 242 kilometres long and 20 metres wide; the depth of its water is from 2 to 2½ metres, and it has no less than than 97 locks. It is of no importance whatever in the present day.

1902-2-20 Journal of Commerce

TO AVOID GIBRALTAR.

A GREAT FRENCH SCHEME.

The Paris correspondent of the "Financial Times" thus writes:—For many years past one of the pet schemes of French statesmen has been the construction of a great maritime canal connecting the Bay of Biscay with the Mediterranean. The scheme in undoubtedly one of prime importance, but though it has been talked about for years both in and out of the French Chamber, and though plans for its completion have been drawn up and details a working are all cut and dried, there is, apparently, little probability of effect being given to the scheme for a long time to come. Private

enterprise is too uncertain as to the commercial profits to be derived from the working of such a canal to venture capital in its construction, while the State has its hands so full and its pecuniary needs are so many and so pressing that the maritime canal papers have been pigeonholed for an indefinite period. A German writer, surprised, no doubt, that so little interest should have been aroused in France itself in a scheme of such real importance to the welfare of the country, has been reviewing the whole scheme in a long and interesting article appearing in a Hamburg paper. The writer says that a consideration which ought to militate powerfully in favour of the construction of this maritime canal in the geographical position of France. The proposed canal would practically increase France's naval strength by 100 per cent. by neutralising the military importance of Gibraltar. The chief advantage of the canal from a military standpoint would be to enable France to transfer a fleet from the Atlantic to the Mediterranean, or vice versa, without the necessity of steaming round the Iberian Peninsula and the difficulty of getting past Gibraltar. Leaving the military aspect of the canal on one side, the German writer is of opinion that, from a commercial standpoint, the existence of such a canal would revolutionise the present trade route between the Baltic, the North Sea and Mediterranean ports. The long route around the Iberian Peninsula would be avoided, and all vessels would take the quickest and shortest route, which would be through the canal. The access to the Mediterranean at the western end would no longer depend upon the goodwill of England, seeing there would be an alternate route through the French canal. England would thus be at a commercial and strategic disadvantage as regards the Mediterranean, and the French dream of the Mediterranean Sea as a French lake would be much nearer reality than it now is.

The tracing of the proposed canal is from Bordeaux, through Toulouse, Castelnaudary and Carcassonne to the Gulf of Lyons. Canals, however, whether strategic or otherwise, are at a discount just now with the French, for the Panama Canal in still unsold.

1902-2-26 Shipping World

A voyage of 13,400 miles on the inland navigation system of England and Wales seems an almost incredible journey but nevertheless it was accomplished between 1887 and 1901 by Mr. H. R. de Salis, A.M.Inst.C.E. This voyage demonstrates not only that we have a canal system, but also the great extent of that system, and the fact that it is of even greater importance than we have yet recognised. A brief glance at the course of Mr. de Salis's journey will show that our inland waterways are favourably placed for the purposes of our commerce. The greater part of the trip was covered in the voyager's own steam yacht, over 2,000 miles in other vessels, and no less than 1,011 miles on foot on the towing path. The longest "voyage" occupied 61 days, and followed a devious route, including Oxford, Atherstone, Rugeley, Market Drayton, Welshpool, Ellesmere Port, Wigan, Liverpool, Leeds, Wakefield,

1902-6-28 Manchester Guardian

The transference of the Prussian Ministry of Railways from General von THIELEN to General Budde has quickened speculation in Germany as to whether a fresh attempt will be made to carry the great Rhine-Elbe Canal project. Since the Agrarians defeated the KAISER over this matter, the KAISER'S Government has asserted its unshaken faith in the scheme but has not re-introduced it. The Ministry of Railways is the department concerned, and the late Minister was reputed one of the Government's stronger members; his resignation, therefore, might herald a Governmental abandonment of the Canal. On Tuesday it appeared that this was the case, for a statement received general credence that the Government would take in hand a Berlin-Stettin Ship Canal. This might not in itself seem a retrogressive stop were it not known to signify the shelving of the more comprehensive Rhine-Elbe scheme. As such it would mean a virtual victory for the Prussian squirearchy, who frankly oppose canals because they dislike the spread of cheap transport and trade to country places. Some doubt has, however, been since cast on the statement, though it is not denied, and the weakness of Count VON BÜLOW makes it not unlikely. In the meantime South

Germany, unhampered by the Prussian squire influence, is undertaking a notable canal scheme on the Upper Rhine. That river is at present navigable by large craft as far as Mannheim; the proposal is to canalise it above that point so that large craft may reach Strassburg, the idea being to carry the canalisation after that up to Bale itself. The Mannheim-Strassburg part of this great scheme is likely to cost over half a million of State money, to be provided in specified proportions by the Governments of Bavaria, Baden, and Alsace-Lorraine. At the same time a plan is on foot to canalise the Neckar. The strong and growing faith of industrial Germany in canals seems to be shared by nearly all the Governments, and even the resistance of the Agrarians implies an equal recognition of their commercial value.

1902-8-12 Journal of Commerce

A CANAL ACROSS FRANCE.

The French Minister of Marine has now before him an official report on the proposal, to make a canal from the English Channel to the Mediterranean (says the London correspondent of the "Glasgow Herald "), and the advocates of the scheme are more hopeful of official recognition of the project, which has military as well as commercial considerations to commend it.. But even at the lowest computation it will cost 56 millions sterling: former estimates put the sum at 80 millions sterling. Even the lesser sum is a formidable amount to raise, especially as the frugal and thrifty French peasantry have not very great reason to put faith in the canal-builders of France. Patriotism, however, counts; “perfidious Albion” is still a powerful weapon in argument; and we are continually hearing of the wonderful things that will happen when the Mediterranean and northern squadrons of France can join forces, so that there is no saying what sacrifices the repeated argument of military necessities, assumed or real, may accomplish. This official report, prepared by the Reporter for the Commission of Marine gives a full account of route, of possibilities of traffic, and of cost The length stated in the report now before me is 279 or 304 miles, according to two alternative routes. The Mediterranean port would be near Narbonne. and the route would be for the most part through the valley of the Garonne to Agen. Thence one scheme still follows the Garonne to the Gironde estuary; the other and shorter way would be across country to Arcahon. In this latter case a secondary canal to Bordeaux might be desirable. The dimensions of the waterway, founded upon experience with the Manchester and Kiel canals, would be 32 feet 9 inches in depth and 130 feet in width; which would pass the largest of warships although the speed of 15 knots assumed is somewhat sanguine. There would be 26 locks, and assuming 37 minutes absorbed in passing through each, the time of transit through the 270 mile canal would be approximately 46 hours. On this basis it is computed that on a voyage between Havre and Malta there would be a saving in time of three days on the durations of the sea voyage by way of Gibraltar Straits This it is thought, would justify canal dues at the rate of 1s 6d per net ton, and would ensure quite a paying traffic.

1902-8-20 Syren

THE following table shows the steady increase during the past six years of the traffic through the Kaiser Wilhelm Canal:

	No. Ships	Net Reg Tons	Paying in Fees
1895-6 passed thro’ canal	16,834	1,507,983	£44,436
1896-7	22,084	2,036,861	52,395
1897-8	23,149	2,648,347	68,154
1898-9	26,254	3,205,855	86,703
1899-00	26,527	3,793,574	94,758
1900-1	39,314	4,347,989	107,485
	145,159	17,450,609	£453,931

1902-8-30 Bullionist

CANAL DEVELOPMENT.

BELGIAN AND BRITISH METHODS CONTRASTED.

LOW ELECTRIC TOWAGE RATES ON CHARLEROI CANAL.

The report of the company which is running the boats on the Brussels and Charleroi Canal, Belgium, draws the attention to the neglected condition of many canals in this country, which might be similarly utilised and made to produce to their owners good dividends. Many of the home canals, unfortunately, have gone out of use altogether and have become overgrown with vegetation, while in others the banks have got into a state of decay. Many of the others have got into the hands of the railway companies, and apparently it does not suit them to develop canals as they have developed the means of traction on the iron way. Others are in working condition, but they are managed with a studied indifference to modern requirements, and no attempt is made to improve or to apply to them modern methods of traction.

Haulage of Goods in Retrospect.

About the year 1750 the cost of conveying goods by road between Liverpool and Manchester was 40s per ton. When the Mersey and Irwell Canal was constructed and boats and barges were built and hauled by horses on it the cost of carriage of goods was reduced to 12s per ton. The building of the Bridgewater by Brindley still further reduced the cost of conveyance between the two places, for very soon after it was opened for traffic the cost of haulage was reduced to 6s per ton. Between Worsley and Manchester, the cost of carrying goods by packhorse was reduced from 6s to 8s per ton, and on the same canal it was reduced to 2s 6d per ton between the two places From Manchester to Nottingham the cost was between £6 and £8 per ton, but the canal built between the Mersey and the Trent reduced the cost of conveyance of goods between Manchester and Hull to £2 per ton. In the Midlands many of the canals still exist and are utilised to a large extent. The magnificent artery between Birmingham and Worcester and the Severn provided a highway for the goods of the capital of the Midlands to Bristol and all the world. This Worcester and Birmingham Canal is 29 miles in length. 6 ft, deep, and 42 ft wide at the top. There is a fall of 428 ft in a distance of 5 miles at one section. Priestley, the historian of English canals, said of it that. "it was the channel for supplying Worcester and the borders of the Severn down to Tewkesbury and Gloucester with coal, and conveys the hops and cider of that part to the North, and for Birmingham it provided a way to Bristol." But many of these canals are in hands which have no intention of developing their possibilities.

Canals Owned by Railways.

The railway companies which have bought up many of the canals, the lengths of canals bought and the number of employees engaged on them are as follows:-

	Miles	Employees
Great Western	258	271
London and North Western	488	214
Midland	50	-
Manchester, Sheffield and Lincolnshire	180½	538
North Staffordshire	121	263
Caledonian	60	340

There was a Select Committee on the question of the utilisation of canal's in 1883. They investigated the question of the transport of goods between London and Liverpool, and they found that 50 tons could be sent through, making all transfers from one canal to another, for £25. This was at the rate of 10s per ton, exclusive of tolls. The time the boat was in motion would be eight. days, while two days would be given up to rest and one day to load and one day to unload. This would take 12 days in all. Of course, this was a small boat, suitable for the locks of the smaller canals en

route. But there are many canals in the country where much larger boats and barges could be accommodated.

The Larger Canals.

There is the Aire and Calder canal, which can accommodate a boat 212 ft long and 22 ft beam, and is 80 miles in length; there is the Bridgewater, which can accommodate a boat 84 ft in length and 15 ft beam, and is 97 miles in length; the Gloucester Canal is 15 miles and takes a boat 163 ft in length and 29 ft 6 ins bean; the Stort is 14 miles, and takes a boat 100 ft long and 13 ft 6 ins beam; the Thames and Medway, 9 miles, and takes a boat, 98 ft by 22 ft 18 ins; and the Trent River, 72 miles, which takes a boat, 90 ft by 15 ft. But it may be said that really nothing in being done on even these large canals, which contain within themselves every possibility for development.

The Brussels and Charleroi Canal

This canal and the transport facilities now offered by the company which is running it, demonstrate what possibilities there are in canals as vehicles for the transport of goods from one inland town to another. The canal is 50 miles in length, and conductors are fitted all along its side for the current to be supplied to the carriages which draw the boats. These carriages are called tractors. The three-phase system of current is used and it is supplied along a circuit of three base conductors at 6,000 volts. There are also three secondary conductors, which receive the current at 600 volts. Every three miles there is a 36-kilowatt transformer, which converts the current from the high-volt wires to those of low voltage. A triple trolley collects the current from the five horse-power six-pole three-phase motors on tractors. Each tractor is powerful enough for towing five boats, each laden with 70 tons at the rate of 2½ miles an hour. The tractors do not go from one end of the canal to the other, but instead each simply works its own beat of about three to four kilometres each in length. There are 60 tractors, and 45 in constant work towing boats. At the present time the company only allow one boat to be pulled by one tractor. The tractor is managed by a boy.

Cost of Towage.

The change made by the company for towing an empty boat is 1.9d per kilometre—that is for each five-eights of a mile. For a full load of 70 tons the charge is 3.8 pence per kilometre. Roughly, this is one-tenth of a penny per ton per mile. The charge for horse towage is 3.9 pence per loaded boat per kilometre, which is about the same as charged for electric towage. But the advantage is in the speed of transportation of the goods. With electric towage it is 2½ miles, or 4 kilometres, an hour, while with the horse it is 1.9 to 2 kilometres. That is, the goods taken between Brussels and Charleroi in half the time taken by horses. The cost to the company for towage at station, with, coal at 14f to 15f a ton, was in 1900 twopence per boat kilometre and in 1901 only one penny per boat kilometre. If such a system were established between Liverpool and London the journey could be made in less than three days and the charge for transport would be less than eighteenpence per ton.

Company Supplies Current.

The company supplies current all along the line to villages and users for power and lighting purposes. The current is supplied at 220 volts, and the charge for lighting is 5½ pence per unit, while for motors the charges range from 2.5 to 1.8 pence per unit, depending on the distance of the motor.

1902-9-3 Glasgow Herald, Chinese canals

Inland Navigation.

The subject of inland navigation is a striking example of the difficulty of dealing with what, appears at first sight an extremely simple matter. By the treaty of Tientsin of 1858 British subjects got the right to travel under passport all over China, and by article 14 it was provided that, they could hire boats wherever they pleased. This right, to hire boats seems to have been interpreted at a very early date to mean Chinese boats of the kind in use when the treaty was made, which, of course, excluded vessels-propelled by steam. In course of time, however, Chinese were permitted to run steamers here and there on the canals and rivers wherever an official was sufficiently liberal-minded to allow

them to do so. In particular, steamers were used for towing on the canals. and busy traffic of a precarious nature sprang tip, especially around the valleys of the Yang-tse and Canton rivers. Foreign merchants had for many years cried out for the right to run steamers and launches elsewhere than between treaty ports, and in 1898, during the political crisis, Sir Claude Macdonald succeeded in obtaining a concession from the Chinese Government that "foreigners equally with Chinese should be permitted to employ steamers and steam launches wherever the use of native boats was permitted by treaty. That is, in fact, everywhere. So far everything was satisfactory, and it might be thought that nothing remained except for foreigners to run their steamers. But the maritime customs of the treaty ports and the native customs at the non-treaty ports, and the likin collectors everywhere, had to be reckoned with. At length a series of regulations was produced of such an ingenious character that no steamer could at the same time satisfy them and be run at a profit. Thus the same steamer was not allowed to touch at treaty and non-treaty ports. If it left a treaty port and visited a non-treaty port, then it had to return before it could touch at another treaty port, and so on with an inextricable tangle of petty regulations which successfully strangled the trade. One British Consul in China, writing of the regulations, gave the following graphic analogy: --- "The concession is reduced to this. A tradesman in an English town may supply Nos. 1 and 20, situated at the respective ends of a street, by a van driven through that street. If. however, he has customers in the intervening houses, he must transfer his goods to another van, at whichever end of the street he pleases (he has that option) and, after supplying Nos. 2 to 19 from that end and that van only, he must return the way he entered, and on no account must he visit or pass the last house at the other end with his second van."

1902-9-3 Shipping World

The Kaiser Wilhelm Canal; French Canals

This waterway may or may not prove of use in a military or naval sense; it is not of much service to trade, which of course was a secondary consideration. But at the time of its construction there were surmises that it would divert the Baltic trade from its route around Denmark. It has not diverted any of it, except quite a trifling amount of local and coasting trade, the dues from which are not sufficient to pay the up-keep of the Canal, though that costs only £100,000 per annum. The Canal cost seven and a half millions, on which of course no interest accrues. This may act as some consolation to Manchester ratepayers; but then the Manchester waterway is of no strategic use. France deliberately sunk sixty millions sterling in 1820, in the State purchase of her inland waterways. Last year the up-keep of these cost only £612,000; but navigation is now as free upon them as traffic is upon the public high roads ; there are no dues. In our benighted country, dues alone, without any freight, are often as much as railway carriage.

1902-9-4 Journal of Commerce

THE WORLD'S CANALS

Amongst the most interesting publications issued by the United States Statistical Bureau is the monthly summary for May last. That compilation contains an exhaustive account of "Commercial" Alaska, and a very considerable amount of valuable information concerning that territory is given in the volume. The principal feature of the production is, however, the mass of information gathered and set forth concerning the great canals of the world. There are, indeed, comparatively few important canals navigable by deepwater ships which connect great bodies of water. Indeed, what may be called "ship canals" are only nine in number, and are the Suez Canel, 1859; the Cronstadt and St. Petersburg Canal, 1890; the Corinth Canal, 1893; the Manchester Ship Canel, 1894; the Kaiser Wilhelm Canal, 1895; the Elbe and Trave Canal (North Sea and Baltic), 1900; the Welland Canal, connecting Lake Erie and Lake Ontario, and two canals, the United States and Canadian respectively, connecting Lake Superior with Lake Huron. Taking these in order, the Suez Canal is, of course, the greatest in every sense, for it has done so much by diverting the Far East trade from the tedious Cape of Good Hope route, to develop trade in East and West, and has in no small

measure changed the complexion of affairs a l'Orient. The capital expended on the great undertaking of M. Ferdinand de Lesseps totals something like 633,040,000 francs. But the return on cost justifies even this enormous outlay, and Suez Canal shares are a property which the British nation holds to-day with very great pride and satisfaction. This canal is something like 90 miles in length, and, according to the authority of the writer in the summary, two-thirds of its length is through shallow lakes. This is scarcely correct, we think, but not having the exact data to hand we give it as it goes forth to the world from Washington. The Cronstadt and St. Petersburg Canal, together with the course through the Cronstadt Bay, form a run of about 16 miles, of which the canal is six miles. The depth is 20 foot 6 inches. The total cost is estimated at about £2,000,000. The Corinth Canal connects the Gulf of Corinth with the Gulf of Aegina, reducing the distance between Mediterranean and Adriatic ports very considerably. Like the canals referred to no locks exist on this cutting. The cost of canal wan something like £1,000,000. The Manchester Ship Canal is already well known to readers of this journal. This canal is some 35½ miles in length, and was constructed at a cost something like £16,000,000. The level of the docks at Manchester is 60 feet above the level at Liverpool, and this is overcome by four sets of locks. The minimum depth of water throughout the course is 26 feet, according to our authority. The total excavations amounted to 45,000,000 cubic yards. The Kaiser Wilhelm Canal connects the Baltic and North Seas through Germany. It has a length of 61 miles and a depth of 29½ feet, the amount of material excavated being about a hundred million cubic yards. The primary object of this canal is strategic, but it is a most useful mercantile waterway, and during 1900 the tonnage passing through its length was 4,282,258 tons. Kiel is the eastern terminus. The cost of the canal was about £7,425,000. The Elbe and Trave Canal was opened in 1900, with a total length of 41 miles and a depth of 10 feet. Electric towage is practiced on this canal, which also connects the Baltic and North Seas. There are seven locks of 201 feet, and the canal is crossed by 29 bridges. Three ship canals connect Lake Superior and Lake Ontario with the St. Lawrance River. Those are the Welland Canal (1833, and enlarged in 1871 and 1900); the St. Mary's Falls Canal, at Sault Ste Marie, Mich. (1855, enlarged 1881 and 1896); and the Canadian Canal, at St. Mary's River, opened in 1895. The number of vessels passing through the St. Mary's River canals exceeds by eight times the number using the Welland Canal, whilst the tonnage is forty times greater. The Welland Canal has a length of 27 miles, and connects Lake Ontario and Lake Erie on the Canadian side of the river. The difference in height (327 feet) is overcome by 25 locks. It cost something like £5,000,000. The canal is open about 240 days each year, and the tolls collected average about £45,000. The St. Mary's River Canal, belonging to the United States, was begun in 1853 by the State of Michigan. It was improved and deepened by the United States Government, and now has a depth of 25 feet. The Canadian Canal has a length of 1.125 mile, a width of 150 feet, and a depth of 22 feet. It has a 900-foot lock. The Chicago Sanitary and Ship Canal connects Lake Michigan at Chicago with the Illinois River at Lockport, a distance of 34 miles. It was cut for the purpose of giving to the city of Chicago proper drainage facilities by reversing the movement of water, which formerly flowed into Lake Michigan, through the Chicago River to the Illinois River at Lockport, and thence down the Illinois River to the Mississippi. The minimum depth of the canal is 22 feet, and it has a bottom width of 160 feet, and a top width of from 162 feet to 290 feet. The work of construction began on 3rd September, 1892, and was completed January 2, 1900, on which date the water was turned into the channel. It now has a flow of 360,000 cubic feet per minute, and the channel has a capacity calculated to carry off twice that amount. The aggregate cost of this wor was £6,800,000.

Other canals worthy of note are the great North Holland Canal, cut in 1845, from Amsterdam to Helder, a distance of 51 miles. It has a depth of 20 feet, and accommodates ships of medium size, large steamers using it when not deeply laden. The Caledonian Canal, which divides Scotland, has a total length of 250 miles, a depth of 17 feet, and a surface width of 120 feet, and an extreme elevation of 94 feet, which is overcome by a number of locks. The Canal du Midi, cut through France, from Toulouse, on the Garonne River, to Cette, on the Mediterranean, a distance of 150 miles, is 60 feet wide, 6½ feet deep, has 114 looks, and is, at its highest point, 600 feet above the level of the sea. Its cost was about £700,000.

It is pointed out that in Europe and Canada the canals are operated in conjunction with, and are made complemental to, the railway systems of those countries. The total length of Canada's canals in operation is 262 miles, but the aggregate length of continuous inland navigation rendered available by them is nearly 3,000 miles. In India the canals, constructed primarily for irrigation purposes at a cost of about £3,000,000, are used extensively for inland navigation. In Germany the canals, apart from the Kaiser Wilhelm Canal, are 1,511 miles in length, and the canalised rivers are 1,452 miles. In France the length of canals in operation is 3,021 miles. In the United Kingdom the length of canals belonging to railways is 1,139 miles, and that of canals not belonging to railways 2,768 miles. The total paid-up capital of United Kingdom canals (exclusive of the Manchester Ship Canal) is something like £30,000,000.

The canals of the United States still used for commercial purposes are 38 in number, with an aggregate length of 2,470 miles, and the total cost of construction is placed at about £41,000,000.

Canals projected are referred to in the summary, as also are many interesting particulars relating to the working of the world's artificial waterways. The effect of ship canals upon commerce is dealt with in an article by Mr. J. A. Fairlie, published some time since. Dealing with the later constructed ship canals, this authority says,—" There may be latent possibilities in the traffic of each of these canals, but thus far the great bulk of the trade they were intended to get remains undiverted from old routes, little new trade has been developed, and no important economic results have appeared. This, however, is not the case with the Suez and St. Mary's Canals." Although this was written four years ago, it cannot be said that the interval has shown reason why the statement then made should be materially altered or modified. Where great savings are effected, such as in the case of the Suez Canal and the North American navigable canals (St. Mary's), or in the case of the proposed Panama Isthmian Canal, it follows that trade will run thither, as it ever will flow through the channels of least resistance. Therefore, for canals to be successful, they must serve some great economic, purpose, and their existence must be warranted for more tangible reasons than those which, for instance, constructed the Manchester Ship Canal.

1902-12-26 Manchester Courier

ANOTHER SHIP CANAL PROJECT.

According to the Paris correspondent of the "Morning Leader," the idea of a ship canal between the Bay of Biscay and the Mediterranean is gaining ground in France. It was discussed at the time of the Fashoda incident, and the troubles in Morocco have again given the scheme political importance. For many of its advocates frankly admit that one object in its construction would be to out-flank Gibraltar, so that in case of war with this country the French Atlantic squadron could reach any port in the Mediterranean without running the gauntlet. Such a theory overlooks the probability that England might, and doubtless would, seize the Atlantic entrance to the "Two Seas Canal." It is the mercantile point of view which will have most influence in settling the question. By a canal of 300 miles it is claimed that large steamers would save 1,200 miles journey, 67 hours time, and £250 in fuel. But this theory presumes that they are travelling to Marseilles, Genoa, or Leghorn. For the South of Italy, North Africa, the Levant, or Suez Canal the saving would be much less in time, whilst the gain in fuel would be more than lost by canal dues. Already passengers to India may avoid the Atlantic section of the journey by travelling overland to Marseilles or Brindisi, and the Eastern and Australian cargo liners would require low dues before they would change their route. Moreover, it will not be overlooked that France , already enjoys a splendid canal system, connecting the river system of the Garonne with that of the Rhone, so that internal communication has little to benefit by the scheme. To expend £32,000,000 on a deep sea "ditch" requires considerable courage. To calculate that a rate of toll like that of the Suez Canal bring in £2,500,000 yearly assumes that all the British and German Eastern liners will make use of the "Two Seas Canal." We may call spirits "from the vasty deep," but, as Hotspur said, will they come? The originators of the Manchester Ship Canal showed, on paper, most attractive financial results, yet after being worked for eight years, the ordinary shareholders have as yet only "hope" for a dividend from the waterway. The French project

would certainly be a "white elephant" if any friction arose between this country and France. On the other hand, if the French Chamber should support the proposal, and it comes to fruition, there is no doubt that British shipowners will promptly make use of any advantages offered, and in this respect the "Two Seas Canal" will act as a friendly link between England and her neighbours across the Channel.

1903-2-3 Liverpool Post

When the question of internal transport is being so much discussed, it is curious that so little attention is being paid to canals. The public mind is running on light railways, electric tramways, and motor cars, and the improvement of inland navigation continues to be neglected. It is probably well for comfort and peace of mind that the tendency of most people is to agree that whatever is best, to praise the scientific attainments and industrial inventions of the age, and to give never a thought to what might have been if invention had taken another direction. Such speculation would be profitable, but it is not out of place to point out that in a particular case, as in the extension of railways and the neglect of canals, we have incurred a serious national loss. The same neglect has not been shown in Germany, Fiance, and the United States, and the lower railway rates in those countries are not altogether unconnected with canal competition. The construction of canals in this country stopped suddenly with the introduction of the railway, and the "railway mania" of 1840-46 has put quite out of recollection the "canal mania" of 1790-94, when a large number of canals were projected and begun. Our canal system began, in fact, in 1760, the Bridgewater Canal was made in 1770, and canal-making enterprise was not extinguished till 1838. Up to that time the prospects of canals were brilliant, the shares being far more attractive to the investing public, than ever railway shares have been. In 1833, for example, the shares of the Loughborough Navigation, with a nominal value of £142, were quoted at £1,820, and paid a dividend of £124. The introduction of railways thoroughly frightened canal directors and shareholders, who did not for a moment entertain the thought of competing with the iron horse. They were eager to get the concerns off their hands, and welcomed the offer of some of the railway companies to buy them up. So blind was the country to its real interests that pressure was actually brought to bear on railway companies to buy the canals. Intelligence, enterprise, and capital went into the railways, all the resources of science and mechanical skill have been at their disposal, and canals were abandoned altogether, allowed to silt up, or, at the best, nothing was done to improve them or to develop inland navigation.

Rather late in the day a little renewal of interest is being shown in the matter, evidence of which is to be found in the publication of a small volume by Mr. T. Fisher Unwin, at the instance of the Cobden Club, with the title of "The Canal System of England." The author is Mr. U. Gordon Thompson, of Victoria University, who presents the facts and states the problem of the future clearly and succinctly. A little more than a year ago "Commercial Intelligence" published a series of articles on the same subject, by Mr. Dewsnup, of Huddersfield. The facts of the throttling of the canal system by the railway companies are not in dispute, nor is it denied that we thereby lose a valuable means of cheap transport. There is, however, immense difficulty in rousing widespread interest in the question, without which it would be impossible to secure the uniformity in construction and management which are required by a national system of waterways. The railways are overcrowded with goods and mineral traffic, which the companies allege, in some cases, does not pay them. Canals can certainly carry more cheaply than railways. it is calculated that canals could carry merchandise at a charge of one-third of a penny per ton mile, and minerals probably at as low a rate as one-tenth of a penny. Without insisting upon any particular fraction, anyone may satisfy himself by going into the figures that the cost by canal would be very considerably less than by railway, and with a reconstruction of waterways and reorganisation of their management a saving would be effected in transport amounting to millions sterling annually.

It is not suggested that ship canals should be constructed, but merely that existing canals should be made efficient. We do not need to go abroad for examples of successful canal working. The Aire and Calder is thoroughly up-to-date and efficient. But although two or three instances of success

may be found, they are not so numerous as to encourage the hope that private enterprise can ever be enlisted to revolutionise our waterways and to do for them what it has done for railways. The difficulties in the way are so great that legislative interference would be necessary for a reformation. There need be no scruple in nationalising the canals that are under railway control, for the railway companies have abused their trust. They providently acquired long stretches of canal in order that they might strangle competition, and they hold also short links which serve them for the same purpose. Amalgamation of small companies and the institution of a canal clearing house similar to the railway clearing house would do much to encourage traffic, for at present a trader using a canal for through traffic has to negotiate wills several small companies with different rates of toll. The amalgamated companies should become carriers, which is the exception, not the rule, at present among canal companies, the majority being simply toll-takers. If the Government bought up the canals it would probably act simply as a toll-taker, but even in that case uniformity of charges and unity of management would in themselves be a vast improvement on the present want of system. Some large scheme embracing all the canals in the country seems a preliminary to improvements in the widening and deepening of canals and of obstructive narrows in many cases of short length which hamper through traffic, in locks, in canal barges, and in methods of haulage. All these changes premise economy in working, but the work can only be satisfactorily taken up as a whole. Private enterprise finds other outlets, however, and no syndicate promoter looks favourably on what might in the end turn out to be a good investment.

1903-2-16 Manchester Guardian

The Canal System of England, by H. Gordon Thompson (T. Fisher Unwin, pp. 70, 2s), is a prize essay published for the Cobden Club by request. Its aim is to set forth in order the facts relating to our inland navigations as a whole and to disease the possibilities which lie before that method of transport. The author shows clearly and concisely the hopeless in- efficiency of our existing canal system for through traffic, and contrasts our backwardness in this respect with the progress of France and Germany. Unhappily there can be little prospect of relief to our commerce and industry by the cheapening of inland carriage until some Government is found public-spirited enough to undertake the purchase and improvement of the whole barge-canal system as a matter of national self-protection. We hope that Mr. Thompson's useful little book will be widely read.

The Shipping World Yearbook for 1903 ("Shipping World" office, pp, 1,242, 5s.) contains several new features of interest and value, the chief of which is a short series of articles reviewing the shipping year. Amongst the subjects dealt with are the world's ship-building and engineering, wireless telegraphy, liquid fuel, the Atlantic shipping combine, the shipping policy of various nations, and the report of the Foreign Subsidies Committee. There have also been added to the volume the new tariffs of Australia, China, Newfoundland, the Transvaal, the Philippines, Venezuela, and other countries, the new Admiralty regulations for the training of officers, a list of the Customs boarding stations, now Board of Trade rules, an account of the Customs regulations affecting the importation of sugar and breadstuff, and the Export Coal Duty Act of 1901. The book is simply invaluable to all infested in shipping, and is, in its way, a masterpiece of compilation.

1903-2-27 Journal of Commerce

THE CANAL SYSTEM' OF ENGLAND.

Under this title Mr. H. Gordon Thompson has, in a small compass, gathered together a great number of interesting facts and comments upon our canal system. Valuable information regarding the history, classification, structural conditions, changes of level, cost of haulage, and administration of the various inland waterways of the country, has been collated, and, an instancing the very thorough way the author has studied the subject, we quote, the following “points” which Mr. Thompson convincingly urges require attention in our canal system:--(1) The dimensions to be given to the main lines, with the best relative proportion of width to depth; (2) uniformity of gauge in locks or lifts, which should be of a size suited to the maintenance of the most effectual steam traffic: (3)

remodelment of the cargo boats, so as to obtain the largest carrying capacity with the least amount of sectional and frictional resistance; (4) provision for working the canals night end day with the help of electric light, the power for maintaining which would be easily and economically obtained at the various changes of level; (5) a uniform rate of toll: (6) a careful revision of the administration, and the establishment of special effective supervision over the whole system: (7) a uniformity of headways under bridges. Mr. T. Fisher Unwin is the publisher.

1903-3-18 Liverpool Courier

The desirability of utilising our inland waterways to a much greater extent than at present has frequently been urged in these columns, and nowadays when so much depends upon the cheap carriage of goods the subject has become very pressing. Owing to a mistaken idea that railways would suffice for all the carrying trade of the country most of the canals were sold to railway companies, they, being supposed to be most capable of developing their usefulness, but they preferred to bend their energies to the development of traffic on the line, leaving the canals to take care of themselves. Even canals which have an independent existence are as it were elbowed aside, and have their depots forced into inconvenient positions. The problem that now confronts us as the results of this short-sighted policy is how to get into working order a network of canals which were constructed apparently with little notion of securing uniformity in width, depth, or size of lock. Sixty years ago, or less even, the canals were largely used for passenger as well as goods traffic, but the railways spoilt that enterprise. To reform the whole system will be an expensive undertaking, but it will probably have to be proceeded with ere many years have passed. On the Continent canals are employed to a much larger extent than in this country, and with excellent results. They have, indeed, got the length of electric haulage, which with us has been no more than mentioned.

An article in the current number of "Fielden's Magazine," by Mr. G. Szasz, shows that on far the methods of electric haulage either in use or proposed have been found wanting in some respect. In order to elicit if possible an improved method a committee appointed in connection with the Tetlow Canal, connecting the rivers Havel and. Spree, offered several prizes, and two of the inventions submitted the committee decided to purchase, one being devised by Messrs. Ganz and Co., of Budapest. The Ganz system, according to Mr. Szasz, has many advantages. The locomotive only requires one rail, thus, of course, obviating the necessity for the upkeep of a costly permanent way. One of the most difficult engineering problems in connection with canal towing is the question of adhesion. The strain on the locomotive owing to wind, streaming waters, bends, and steering, is varied erratically and suddenly, and the stability of the trailer has to be secured in order to prevent accidents. The Ganz system surmounts this difficulty by having the rail, which is in the side furthest from the canal, gripped between the flanges by two inclined wheels, whose adhesive power is really increased by any extra towing strain. Though the locomotive thus runs upon one rail it has another wheel which rests upon the towing track, and whose purpose is to pack up the whole engine. It is claimed for the new system that it is much cheaper than any that has been suggested. The first cost is at any slight owing to the single rail and the lightness of the locomotive required. In this country we are probably some distance from the employment of such methods of haulage on our canals, but in view of the reform which is certain to take place in the near the near future the experiments which are being made on the Continent will be watched with interest.

1903-6-20 Liverpool Courier

ENGINEERS' CONFERENCE.

CANALS AND TURBINES

INTERESTING DISCUSSIONS.

The conference of the Institutions of Civil Engineers was resumed yesterday at Westminster,

Mr. E. Gerald Fits-Gibbon, engineer of the Aire and Calder Navigation, introduced a discussion on "Recent improvements in canal engineering." Since the opening of the Manchester Ship Canal in

1894 he said that very few noticeable improvements had been made in connection with the waterways of Great Britain. Few canals had been projected or constructed, the most important being, perhaps, one of about 5½ miles in length to connect Sheffield and South Yorkshire navigation with the Aire and Calder navigation. This would shortly be completed, and would place the South Yorkshire coalfields in direct communication by water with the ports of Goole and Hull. Last year Parliament authorised the construction of a canal five miles in length to connect the Medway with the Thames at an estimated cost of £245,310. The Sheffield and South Yorkshire navigation was about to improve its waterway. The river Weaver navigation had introduced electricity for working the celebrated Anderton Lift. The Leeds and Liverpool Canal Company had improved and were continuing to improve their navigation. Abroad great advances continued to be made in inland navigation, and in Europe no well as in the United States and Canada the Government and the people were alive to the great advantages to be derived from first-class waterways. Everywhere new canals were being constructed, either entirely by the State or with substantial State assistance. In this country there was an apparent lack of sympathy with canals on the part of the Government which together with severe and often combined competition of the railway companies who owned many of the connecting links of through routes by water had tended to retard the progress of inland navigation. But notwithstanding this some of the more progressive companies were holding their own. Particular attention had recently been directed to electrical haulage and propulsion, and several systems had been tried with more or less success. At present Great Britain had about 3,938 miles of canals, of which 415 miles were derelict or abandoned, and 1,284 miles under railway control.

Mr. Lionel B. Wells (Manchester) thought there were very few people in Manchester who were not thankful that the Ship Canal had been made. Unfortunately, the whole burden had not been upon the shoulders that should have borne it. The City of Manchester came to the rescue, however, by affording five millions of money, and the people were now reaping very great benefit from its construction. With regard to Great Britain's lack of contribution towards the maintenance of her waterways, which had been painted out by Mr. Fitz-Gibbon, he thought the matter should be considered by the Board of Trade. Without that consideration the Government could not be expected to move. In his own view, there should be a canal from Birmingham either to the Mersey or the Thames At any rate, there should be an exhaustive inquiry into the whole subject.

Mr. W. B. Wheeler (Boston) said be did not believe in grandmotherly legislation. Private enterprise had done the work in the past, and there was plenty of private enterprise still. The Manchester Ship Canal had been of enormous benefit to the ship-owners who put their money into it. If they did not get dividends in one way, they did n others.

Mr. L. F. Vernon Harconrt (London) pointed out that British conditions were not analogous to those in other countries. To hope to get canals throughout the country as they had in France would be merely throwing money away in the face of the excellent railway facilities that existed.

STEAM TURBINES.

Professor Rateau, of Paris, introduced the subject of steam turbines, and insisted on their advantages for ship propulsion owing to their capability for producing great power and high speed. Turbines were, he said, exhibiting surprising results. The Hon. C. A. Parsons, to whom in this department of engineering M. Rateau paid a high compliment, took part in the discussion. The view generally expressed was that the turbine possesses vast possibilities.

ELECTRIFIED RAILWAYS.

Another subject discussed was high speed electric traction on railways, regarding which Mr. Jacomb-Hood called attention to the interesting experiments in America with alternating currents, involving only one overhead conductor.

1903-8-20 Journal of Commerce

AN INDIAN SHIP CANAL.

Since the success of the Suez Canal several important ship canals have been commenced and in some cases finished, in different quarters of the globe. The financial history of these undertakings has, however (remarks "Engineering"), been in nearly every case more or less disastrous, and the average investor is likely to think twice before he again takes shares in undertakings of this nature. We note, however, that the South India Railway Company is purposing the construction of a new ship canal which would seem to have every prospect of the highest commercial success. The proposal, in short, is to substitute a full-size ship canal for the Pamban Channel, which now forms the only navigable pass between India and the island of Ceylon, and at the same time the company propose to make, as part of the canal, a dock which, when finished, will be the only one this enormous stretch of coast between Bombay and Calcutta at which ocean- going steamers ran be brought alongside a wharf for the discharge of their cargoes. The geographical conditions are most peculiar. Every one, of course, has heard of Adams' Bridge, between Ceylon and India, but few, we fancy, realise by how little Ceylon fails of being a mere peninsular projection to the neighbouring continent. Roughly speaking, the distance between Ceylon and India at the site of the "bridge" is about 50 miles but two-thirds of this distance is constituted by the islands of Manar and Rameswaram, between which lies the shoal of Adams' Bridge, the water over which is nowhere more than about 12 feet deep, while, in many places the soundings are under one fathom, and navigation across it therefore open only to craft of the most moderate dimensions.. Such traffic as posses through the Gulf of Manar into Palk Strait makes use, however, of the Pamban Pass, which separates the lsland of Rarmeswaram from the Indian Peninsula. This pass is an artificial channel about 150 ft. wide and 12 ft. deep, the distance between the 30-ft. soundings on each side being seven miles. Obviously it can be used only by small coasting vessels, whilst mail steamers and the like going to Calcutta, or Madras, must pass round by the south of Ceylon, which increases the distance between Suez and Calcutta by about 350 miles when Madras is the next port of call, and by 250 miles when Calcutta is the port aimed at. The South Indian Roil. way Company propose, therefore, to close up the present Pamban Channel, and to make a new canal through the island of Rarmeswaram, at a point about three miles east of the present pass This canal will be of sufficient dimensions to pass all steamers capable of going through the Suez Canal. Its length will be 3¼ miles and near the middle of its length it is proposed to create a fully-equipped dock, with warehouses and sidings, which will be connected by rail with the present terminus of the South Indian Railway at Mandabam. The entrances to the canal have been fixed so that they are sheltered from the monsoons at each end, and the direction of the canal is also such that these monsoons will blow practically straight along it, and will thus little affect the steering of steamers making the passage. A very small amount of dredging will provide a depth of 30 ft in the approach channels. There are no tidal difficulties to be faced, as the range of tide is only 3 ft. as a maximum, and is normally much less, The canal will have a bottom width of 80 ft., with side slopes of three to one up to 4.33 ft. below mean see-level. There will then be a berm 10 ft. wide up to the topbanks, which will have a slope of two to one. The material to be excavated is mainly sand, which forms 5.3 million cubic yards out of a total of 5.8 million cubic yards of excavation. A wharf wall 2,500 ft. long will be built along the western side of the channel, at which five vessels can be discharged simultaneously. Special facilities will also be provided for coaling steamships, and to this end there will be a coal store capable of holding 50,000 tons. As matters stand, vessels coaling at Colombo. or Madras, can only do so from lighters, and though wages are low, the cost of coaling is high. The cost of the canal is estimated at Rs. 86,53,000 (£577,000), and the net revenue anticipated is about £100,000 per annum—a truly remarkable return on so small a capital expenditure The railway connecting the canal with the South Indian Line will be carried over the canal by a swing-bridge into the interior of Rarmeswaram Island, and will ultimately, no doubt, be connected with the Ceylon lines, by way of Adams' Bridge and Manar Island.

1903-11-17 Liverpool Courier

CANAL BURST.

GREAT DAMAGE.

A serious accident occurred in the South Staffordshire district on Saturday evening owing to the bursting of the Stourbridge Canal, about fifty yards from the Great Western railway at Brettel-lane: A boatman had just passed along the canal with a boat, when the towing-path gave way behind him. A huge gap was thus created in the canal, through which the water rushed ina huge and increasing torrent. The flreclay works of Mr.G K. Harrison were swept by the deluge of water and great damage done, which will keep the workpeople unemployed for a long time. Two miles of the canal were drained before the supply of water was exhausted. Part of the water cut a deep channel for itself through the works and ultimately reached the Stour. Part, however, found its way to the mines near the spot, and on Sunday other mines in the vicinity were affected and the horses had to be brought up. Had it not been that work had ceased on Saturday when the canal gave way there must have been loss of life as well as of material. It is roughly estimated that the total damage amount to about £10,000. Many hundreds of workmen are rendered idle.

1903-12-10 Fairplay

NORTH SEA SEA AND BALTIC CANAL.

THE statistics relating to the eighth working year of the North Sea and Baltic Canal (1st April, 1902, to 31st March, 1903) testify to a continuation of the increase of the traffic in that waterway, which has been in steady progress from year to year since its completion. The rate of progress may be seen at a glance from the following figures :—

	Vessels	Tons net		Vessels.	Tons net.
1896-7	19,960	1,848,458	1900-1	29,045	4.282,094
1897-8	23,108	2,469,795	1901-2	30,161	4,285,301
1898-9	25,816	3,117,840	1902-3	32,010	4,573,834
1899.0	26,279	3,488,767			

There was a material increase in the through, or end to end, traffic in the past year, which goes, apparently, to prove that the Canal is coming into greater favour with the regular lines—the figures are: 4,018,493 reg. tons in 1902-3, against 3,582,296 reg. tons in 1901-2. In the German coasting trade the net register tonnage rose from 1,028,154 in 1901-2 to 1,119,420 in 1902-3, about 30,000 tons of this quantity being to the credit of the lighter Traffic. As regards the steamers which used the Canal, there was a large increase in the number of the smaller ones (i.e., under 100 reg. tons), namely, 7,406, against 5,858; in the class of 1,000 to 1,500 tons, the number was greater by 107, namely, 376, against 269; while of those of over 1,500 tons there were 153, against 243 in the receding twelve months. The greater part of the increase in the traffic during the past working year stands to the credit of the flags of foreign nations rather than to the German flag—the British and Russian flags taking the lead.

The tonnage percentages in the last two years are thus shown:-

	1902-3 per cent	1901-2 per cent
German	62.36	62.11
Belgian	0.24	0.36
British	8.35	7.57
Danish	8.95	9.16
French	0.11	0.22
Dutch	5.97	5.69
Norwegian	3.39	4.03
Swedish	5.78	6.20

Russian	4.15	3.53
Others	0.63	1.11

Taking the coasting-trade traffic alone, the percentage of the German flag receded from 93.21 to 91.64, while the shares of the Danish, Dutch, and Swedish flags were all somewhat greater.

The average duration of the passages through the Canal in 1902-3 was 8 h. 51 min. with a draft of 5.4 metres, 11 h. 31 min. with a draft of 5.5 to 6.9 metres, and 12 h. 43 min. with a deeper draft than 6.9 metres. These figures show a fair improvement on those recorded for the previous year, namely, 10 h. 16 min. with a draft of 5.4 metres, 12 h. 13 min. with a draft of 5.5 to 6.9 metres, and 13 h. 19 min. with a deeper draft. The tugs with lighters in tow took on the average 19 h. 25 min. in getting through the Canal. The stoppages and accidents were of very slight importance, and only one serious casualty occurred, namely, the collision between the steamers Bremen and Luise.

In the financial position an equilibrium has not yet been effected. The receipts during the year under review were 2,282,764 marks 27 pfennige, and the expenditure amounted to 2,507.350 m. 79 pf., leaving, therefore, a deficit of 225.586 m. 52 pf. In the previous year the receipts were 2,169.569 m. 84 pf., and the expenditure 2,472,290 m. 91 pf., and the deficit was 301,721 m. 07 pf. Elbe pilotage money to the amount of 243,037 m. 6o pi'. had to be deducted from the gross receipts, as well as the sum of 941 marks due to the State of Hamburg for the hire of Elbe Customs' signals. With these deductions, the annual net income since the Canal was opened is thus shown:—

1902-3	2,117,240 m.	1898-99	1,588,680 m.
1901-2	2,111,045 m.	1897-98	1,264,266 m.
1900-1	2,124,211 m.	1896-97	975,105 m.
1899-00	1,807,505 m.	1899-96	889,198 m.

1904-8-8 Journal of Commerce

GERMANY’S CANAL SCHEMES

Revival of an old Project

HM Consul-General at Frankford reports that the proposal, which has already twice been abandoned, for the building of artificial waterways to unite the Prussian rivers with each other, has recently again been presented to the Diet in a revised form. The new bill is divided into two parts, the purpose of one being to supply sufficient protection, against all dangers of inundation, the other dealing with the waterways proper. The provisions of the Canal Bill proper include the grant of 197,100,000 marks for the construction of a ship canal from the Rhine to Hanover; 43,000,000 marks for a canal navigable for large ships from Berlin to Stettin; 21,100,000 marks for improvements of the canals between the Oder and Vistula, as well as those of the Warta, and for the opening of the Netze to Posen; 18.900,000 marks are apportioned for the canalisation of the Oder from the point of junction with the the Neisse to Breslau. HM Consul-General goes on to say there in no doubt that the construction of these canals, even in their present limited form, will materially benefit home agriculture and industry, for the carriage by canal would be a great deal cheaper than by rail, and the charges for transport have for purposes of competition. become of paramount. importance. The price of railway freight front Ruhrort to Mannheim is, for instance, for coal, 7 marks 90 pf., and by water 2 marks 75 pf., although the natural waterway there used exceeds the railway line by 26 kiloms; from Stettin to Berlin the charge by rail amounts to 4 marks 90 pf., by water to 2 marks 30 pf.; the freight for grain from Bromberg to Berlin amounts to 13 marks 90 pf., by water only to 6 marks 90 pf., etc.

1905-1-26 Fairplay

NORTH SEA AND BALTIC CANAL

THE Imperial Canal Commission has issued its report on the ninth working year of the above-mentioned waterway--namely, from the 1st April, 1903, to the 31st March, 1904—and the statistics given again afford proof of the constant increase in the traffic, not so much as regards the number of vessels as to their tonnage. The rate of progress may be gathered from the following figures:-

	Vessels	Tons net		Vessels	Tons net
1896-7	19,960	1,848,458	1900-1	29,045	4,282,094
1897-8	23,108	2,469,795	1901-2	30,161	4,285,301
1898-9	25,816	3,117,840	1902-3	32,010	4,573,834
1899-0	26,279	3,488,767	1903-4	32,038	4,990,287

The share of the German cargo coasting trade in the past working year was 1,220,867 register tons net, against 1,119,420 tons in the previous twelve months, the increase being divided between the steamers and sailers. One feature worthy remark in these returns is the evidence of the increasing size of the vessels using the canal, the average tonnage capacity in the past year being 279.30 register tons, against 250.99 in 1902-3: this is owing more especially to the greater number of steamers measuring more than 1,500 tons, of which there were 188, of altogether 452,851 tons, against 153 (355,539 tons) in 1902-3. The shares of the different flags in the total traffic of the canal during the past four years are shown in the following table of percentages:—

	1903-4	1902-3	1901-2	1900-1
German	59.20	62.36	62.11	61.64
Belgian	0.18	0.24	0.36	0.57
British	9.01	8.36	7.57	9.79
Danish	10.17	8.95	9.16	8.30
French	0.09	0.11	0.22	0.44
Dutch	5.54	5.97	5.69	3.59
Norwegian	3.32	3.39	4.05	5.35
Swedish	5.69	5.78	6.20	6.67
Russian	6.35	4.15	3.35	2.92
Others	0.45	0.69	1.11	0.73

The share of the German flag, it will be seen, is less than it was, while that of Great Britain, Denmark, and Russia is greater. This fact prompts to an examination of the direction in which the traffic goes, and here it is shown that in the movements from the North Sea to the Baltic last year there was a considerable increase when compared with those of the previous year in the trade to German Baltic ports (amounting to 117,868 tons), to Russian or Finnish ports (137,460 tons). and to Danish ports (110,337 tons); in the contrary direction, on the other hand, there was an increase of 184,123 tons with destinations to Elbe ports, and of 128,700 tons to British ports. Corresponding with the greater amount of tonnage, the quantity of cargo carried through the canal has also greatly increased—namely, by 416,453 tons (4,990,287, against 4,573,834 tons). The most important fact recorded in this report, however, is that for the first time since the opening of the canal there is a surplus of income over expenditure; the balance to the good amounts to 57,824 marks 50 pfennige, whereas in the previous year there was a deficit of 225.586 marks 52 pfennige. The surplus would have been still greater, the report says, if the charges for tug hire were high enough to cover the expenses of towage. and if the vessels and different craft belonging to the imperial Navy paid dues. The movements of German war vessels in the canal, indeed, are not in any way reckoned in the foregoing statistics. The accidents in the canal have lessened in number year by year since the commencement, as may be seen from the following table recording the percentage for each year:-

1896-7	7.83	1900-1	3.20
1897-8	5.16	1901-2	2.28
1898-9	4.45	1902-3	1.85

1899-1900 3.28 1903-4 1.92

The number of the accidents in the past year was 171, but only three of them could be called serious, and 58 of them were really only cases of delay.

1905-2-8 Liverpool Post and Mercury

GERMANY'S CANAL SYSTEM.

GREAT EXTENSION AUTHORISED.

Reuter's Telegram

Berlin, Tuesday.—The Lower House of the Prussian Diet today passed the second reading of the Bill authorising the construction of the Rhine-Weser Canal, with an extension to Hanover. The house, by 255 votes to 132, with two abstentions, subsequently passed the second reading of paragraph 1 of the General Canal Bill, empowering the Government to expend the sum of 334,575,000 marks, about £16,500,000, for the construction of waterways.

(From Own Own Correspondent)

Berlin. Tuesday Evening.— Great importance is attached to the adoption today in the Prussian Legislative Assembly by a large majority of a canal bill introduced by the Government. The bill authorises the Minister of Public Works to construct canals joining the rivers Rhine and Weser, by way of Hanover, a canal connecting the Oder and the Vistula, and a canal connecting Stettin and Berlin. whereby Berlin will become accessible to sea-going ships. In addition to these great works, there is to be a network of smaller canals. The entire scheme is of great importance to German commerce.

1905-3-9 Journal of Commerce

THE CANAL SYSTEM OF GERMANY.

The "Times' " Supplement of Monday last contains an article on the German method of canal working. This may be of interest to those who grieve to recognise the decadence of our once boasted British, canals. As Mr. Lee, in his paper before: the Society of Art, showed a few months ago, no less than four thousand miles of our system has fallen out of use altogether, whilst the Basingstoke Canal has long looked for a purchaser. Even those inland waterways which still exist, as such seem to live but on sufferance. In Germany, on the other hand, it appears that the process of canal building and of canalising existing rivers still extends, whilst those who are concerned in the traffic make a return on their money in spite of the existence of railway facilities. It should be explained, however, that the waterways themselves are public property—private enterprise has to be satisfied with the owning of steamers and barge, and the provision of such facilities as ware- houses for the stowage and handling of goods, and towing chains in the beds of the rivers. The capital of Prussia seems to be the centre of activity in the direction of inland navigation. Not only is the capital brought into communication with Hamburg and the North Sea by the Elbe, and with Stettin, and the Baltic by the Oder, but it has also connections which carry its lines far back into Bohemia and Silesia. The character of the goods borne on these waterways seems to be of a very miscellaneous description. Inwards there come all kinds of goods from oversea, as anyone who has spent a day in Hamburg Docks and watched the big canal boats loading from the steamers will testify. Coal, bricks, cement, and timber are naturallv amongst the staple articles carried, but it is interesting to learn that the Bohemians send their fruit to market by water, and do so in lightly-constructed craft that they, though capable of bearing a light, cargo for a distance of some four hundred and twenty miles down stream, are not worth making capable of a return journey under less favourable conditions. So, having made their trip, they are sold for breaking up. But it is not by any means only cheap goods that are carried, for wine, electric cables, pianos, and coffee are amongst the articles enumerated. Under favourable conditions the journey from Hamburg to Berlin may be accomplished in a couple of days, and the charge for express goods of an important character over

this route would he as much as 20s a ton. Rough goods by slow vessel, however, may be got through at as small a freight as 5s. But the rates fluctuate according to season and the strength of the currents, whilst, of course, the amount of business offering is always a factor to be considered. But competition amongst the canal companies tends to depress the charges. Tugs and barges were formerly the chief mode of conveyance, but now there are many cargo steamers in the trade. An idea of the conditions under which business is conducted may be gleaned from the account given of one big Elbe company, which has recently been formed by the union of three competitors. It owns 350 miles of towing-chain in the beds of the rivers Saale and Elbe. It has warehouses in Hamburg, Magdeburg, and Dresden, whilst its business extends over some 350 miles of waterway. Its fleet comprises some 310 barges, of from 1,200 tons capacity downwards, 137 steamers, 180 lighters, and 12 warehouse-barges. But this big concern has by no means a monopoly of the trade. There are other companies at work, and a great number of private barges-owners. These latter, it appears, have of recent years had a very bad time, owing to the severity of the competition for cargo. Over-building has been the cause of depression here, as it has been in the larger field of ocean tonnages, and over-building here, as elsewhere, has been encouraged by too large facilities for financing the barge-owner. In a country like Great Britain, where no place is very far from the seaboard, and where the railway facilities have been so far extended, there is not the scope for inland navigation which Germany affords. These factors may prevent the experience of the Germans being as valuable to us as they otherwise might be, and relieve our canal managers from some of the stigma which we are told the superior Germans attach to them, when they express surprise at the decadence of our system.

1906-9-14 Journal of Commerce

GREAT CANAL PROJECTS.

The making of the Kiel Canal from Hamburg, which insulated Denmark and Schleswig-Holstein and gave the German Navy a short cut from the North Sea to the Baltic (says the "Morning Post") naturally suggested other projects. One of these is to unite the Elbe. the Weser, and the Rhine, and the last-named river is to be extended into Bavaria. In Austria an elaborate plan has been designed for linking-up the systems of the Oder, Moldau, Upper Elbe, Vistula, and Dniester at a cost of seven hundred million crowns, and a sanguine estimate fixes the commencement of this work for next year. The removal of the obstacle known as the Iron Gates of the Danube was an aspiration of the Emperor Trajan. It was actually carried out in 1898, and the greatest trading river in Europe is now enabled to give its full service to Bavaria, Austria-Hungary, Servia and Roumania, though as a set off it, is held that the defences of Vienna and Budapest are weakened by the possible attack of a flotilla from the Black Sea. An ambitious plan has been put forward for a waterway right across Europe from the Baltic to the Adriatic by a circuitous route between Stettin and Fiume via the Oder, Wank, Danube, Save and Kulpa, and by some small existing canals. During the Ministry of M. Waldeck-Rousseau the French Chamber voted a sum of six hundred million francs for the construction of a canal to join the coalfields of the Pas de Calais with Lorraine, for another from the Loire to the Rhone. for a subsidiary Northern Canal, and for one from Marseilles to Arles, this latter being to meet the competition of the Port of Genoa. Even Russia proposes a canal from the Sea of Azoff to Rostoff on the Don; and two others joining the Caspian to the Black Sea on one side and to the Sea of Aral on the other. the effect of which would be that "the special flotilla on the Caspian would be capable of reinforcing or being reinforced by the Black Sea Fleet, and the completion of either or of both canals would enormously strengthen the military position of Russia with regard both to Persia and to Central Asia." Following the example of Manchester and Leeds, Brussels and Bruges have now become in a technical sense seaports, and a similar result in the case of Chicago has become possible through the wise and enterprising canal policy of the Canadian Government. It is a curious fact that a canal of navigable size, though not used for that purpose, runs from the Chicago River to the Mississippi, thus constituting as a gigantic island the whole of the Eastern United States, together with Nova Scotia, New Brunswick, and portions of Quebec, an rendering it

entire feasible to travel inland be water from the Gulf of St. Lawrence to the Gulf of Mexico. Nor is South America behindhand in canalisation schemes. It is proposed to unite by canals her three great arterial rivers, the Amazon, the Parana, and the Orinoco. The magnitude of this may be measured by saying that it would join Monte Video and Para, Venezuela and the Argentine, and affect every State in the sub-continent except Chili and Peru.

1906-9-30 Manchester Courier

The canal between Terrtieuzen (on the Scheldt) and Ghent affords, in many respects, the nearest Continental parallel to the Manchester Ship Canal, and it happens that by way of the two canals there is a considerable trade between the two inland ports. The present deepening of the Manchester Canal from 26 to 28 feet has its counterpart, too, in the improvements which are now being made in the Ghent Canal. The canal was opened in the year 1827, before the declaration of Belgian independence. Two locks were constructed, having a width of 39 and 26 feet respectively. In 1885, in accordance with a treaty with the Netherlands, the canal was widened to 182 feet at the surface and deepened to a nominal 21 feet 6 inches. In 1902 a further agreement was made between the Belgian and Dutch Governments with respect to the canal, and the dimensions will eventually be as follows:—Width of canal bed, 78 feet 6 inches; width at water line, 213 feet in Belgian section and 220 feet in Dutch section; depth of water, 28 feet 9 inches in both sections. The canal will thus be of sufficient dimensions to permit of large sea-going vessels reaching Ghent. According to the latest report of the British Consul General at Brussels the deepening, although now in progress, will not be completed before 1907.

1906-10-17 Journal of Commerce

GERMAN WATERWAYS

Mr. Consul-General Schwarbach, reporting on the trade and industry of Germany, makes special reference to the Prussian Canal project. He says:--The Bill provides for the construction of a waterway connecting the Rhine and the Weser, with a branch canal to Hanover, the construction. of a waterway from Berlin to Stettin for vessels of 600 tons, besides two minor schemes for the improvement of the waterways connecting the Oder and Vistula Rivers, and the regulation of the Oder. The total cost is estimated at £16,728,750, of which £12,537,500 are for the Rhine-Weser Canal and £2,650,000 for the Berlin-Stettin waterway. The Bill establishes a State towing monopoly for the Rhine-Weser system and the Hanover branch canal, and the principle of tonnage dues for navigable streams. Special regulations for state towage will be issued at a later period. Mechanical towing by private enterprise is prohibited, and special permits are required for the use of these waterways by vessels propelled by their own motive power. The introduction of the towing monopoly was advocated as a means of abolishing the prevailing competition between railways (the railways are practically State-owned) and waterways, and as a means of organising a forwarding service on uniform lines with fixed deliveries and freight rates. Lastly, the towing monopoly will enable the Government to extend its tariff policy both over waterways and railways. It remains to be seen whether the substitution of the State management for private enterprise will fulfil the expectations raised by the advocates of the monopoly. Its adversaries point out that the tariff policy of the Government may be influenced more by fiscal than by economic considerations, which is a frequent complaint with regard to State railways. The tonnage dues on navigable rivers are to cover the interest and charges for redemption on the sums expended for the regulation and deepening of such streams in the interest of shipping. The Prussian Diet passed a resolution urging the Government to introduce Bills for the canalisation of the Mosel, Lahn, and Saar Rivers in West Prussia. and for the construction of the Masuric Canal in East Prussia. The canalisation of these tributeries of the Rhine would benefit in. the first place the iron industries of Lorraine, Luxemburg, and the Sieg district, and, by thus enabling them to obtain coal and ores at cheaper rates than now, increase their competitive power. The Lorraine and Luxemburg iron manufactures are to a large extent exported. The rapid strides made by the Rhine ports, Ruhrort and Duisburg, are principallv

due to the extension of the German coal and iron intluetry in the west and to the great improvements in the Rhine navigation, more especially in the middle and upper reaches of the river. These improvements have benefited to a very great extent the two ports of Mannheim and Ludwigshafen on the Upper Rhine.

1906-1-12 Liverpool Post

GREAT CANAL SCHEMES.

In view of the Premier's recent promise of an inquiry into the British canal system, a Foreign Office White Paper containing further reports on the navigable inland waterways of certain continental countries will be of value, especially for the references to former communications and maps.

Belgium spent on an average £750,000 a year on her waterway system in 1900-2, and the kilometric tonnage carried in 1903 was no less than 1,035,422,443.

France has still a great scheme of improvement and construction in hand, dating from December, 1903, when the expenditure was estimated as £8,240,000, new works alone costing over £7,000,000.

Germany is witnessing the development of the Great Prussian scheme, which is to cost £16,728,750. Of this sum £12,537,500 represents a canal from the Rhine to the Weser, including the canalisation of the Lippe and various accessory works; £2,150,000 is for a canal for large vessels from Berlin to Stettin; £1,058,750 to improve the waterway between the Oder and the Vistula, and to better a portion of the Warthe; and £982,500 is allowed for the canalisation of a portion of the Oder.

In the Netherlands a great improvement completed last year was the separation of the rivers Maas and Waal, which cost £1,750,000. References are also made in the report to the improvements during recent years in the three important waterways, the North Sea Canal, from Amsterdam to Ymulden, from Terneuzen to Ghent (the cost of this work, which is still in progress, is estimated at £943,750, and the whole of it will be borne by Belgium), and on the Mermede Canal, from Amsterdam to the river Lek at Vianen.