

# A French Agricultural Canal—the Canal de la Sauldre and the Nineteenth-Century Improvement of the Sologne

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THE role of canals in the early stages of the Industrial Revolution has been frequently documented both for France and for elsewhere.<sup>1</sup> A four-point appraisal of the use of canals by Thomas Telford in the early 1800's emphasized their function as a means of conveying mining produce to the coast, fuel and raw materials to manufacturing centres, and manufactured goods, groceries, and other merchandise to markets. Firstly, Telford itemized their role of "conveying Fuel for Domestic Purposes; Manure for the purposes of Agriculture; transporting the produce of the Districts through which the Canal passes, to the different Markets; and promoting Agricultural Purposes in general."<sup>2</sup> Despite this early reference, Hadfield considered that "the value of water carriage in enabling manure—to use the old word—to be applied by farmers to their land has hardly been given its right importance in the history of that revolution in agricultural methods that went on in Britain at the same time as the Industrial Revolution."<sup>3</sup> The transport of marl—which is synonymous with the term *manure* in both these quotations—suffered from high transport costs as much as other bulky goods in the days of wagons and pack-horses. Early examples of the application of canals to agricultural purposes in England include the Basingstoke Canal which was enacted in 1778 and the Bude Canal which was designed to carry sea-sand as a marl into the interiors of Devon and Cornwall.

Similarly, agricultural considerations played little part in instigating early French canal pro-

jects which in the seventeenth and eighteenth centuries were largely to supplement and especially to link existing natural waterways, and so promote their commerce which in the nineteenth century became increasingly of an industrial nature. Thus the significance of the Canal de la Sauldre, a minor, localized waterway in the Sologne region to the south of Orleans, lies in its function as primarily an agricultural canal for the transport of marl. However, in its origins it approaches the more general, commercial conception of other French waterways.

As a region of low natural fertility worsened by inadequate internal communications,<sup>4</sup> the Sologne had prompted several schemes for improvement, sometimes involving canals. Although these plans proliferated in the eighteenth and nineteenth centuries with the wave of new ideas and techniques of the Agricultural Revolution, a notably early sixteenth-century project, conceived around a central canal, was put forward by the *savant*, Leonardo da Vinci, who passed the last few years of his life as a *protégé* of Francis I at Amboise on the western margins of the Sologne. Da Vinci's proposed canal through the Sologne was part of a larger waterway scheme of his to link the Touraine, his adopted home, with his native Italy. His manuscript notes and sketch-maps are far from clear about the proposed route. Starting from Tours, or perhaps Blois, the canal was to pass through Romorantin and then to take a direct route to the River Allier rather than follow the course of the River Cher. Undoubtedly in part

<sup>1</sup> A. L. Dunham, *The Industrial Revolution in France 1815-48*, 1955, pp. 28-48.

<sup>2</sup> C. Hadfield, *British Canals—An Illustrated History*, 1966, pp. 33-4, quoting T. Telford, *A Survey and Report of the proposed extension of the Union Canal from Gunley Wharf, in Leicestershire, to the Grand Junction Canal, near Buckby-Wharf, in Northamptonshire*, 1804.

<sup>3</sup> Hadfield, *op. cit.*, p. 98.

<sup>4</sup> K. Sutton, 'La Triste Sologne. L'utilisation du sol dans une région française à l'abandon au début du XIXe siècle', *Noréis*, 61, 1969, pp. 7-30.

this scheme would have involved the waters of the River Sauldre. Indeed da Vinci considered that by diverting water from the Loire tributary (Allier or Cher) into the Sauldre ("*le fleuve de Romorantin*") the canal "would enrich the lands which it irrigates, and would fertilize the countryside; it would secure food for the inhabitants and serve also as a navigable canal for commercial traffic." Thus agricultural as well as commercial justifications were invoked.<sup>1</sup> After da Vinci's death his Saône-Loire link-up was proposed by Adam de Crapone and the late eighteenth century saw proposals to the Provincial Assemblies of Berry and Orléanais for a Loire-Cher link-up terminating at Vierzon, analogous to the earlier Canal de Briare connecting the Loire and the Seine.<sup>2</sup>

Other late eighteenth-century improvement schemes involving canals were more parochially concerned with the economic and particularly agricultural development of the Sologne. Thus d'Autroche's plan, which won the prize offered by the Société Royale d'Agriculture d'Orléans in 1876, included proposals for the state to provide a complete network of roads supplemented by a canal either parallel to the River Beuvron or by rendering the river navigable. "It is only by means of a canal that one can hope to drag the whole central part of the Sologne out of its state of inertia and death-like trance in which it is plunged."<sup>3</sup>

Some fifty years later in 1836 the same Société Royale again offered a prize for the best *mémoire* on the area's agricultural situation and the means to improve it. The winner, Bourdon, continued to include a canal in his projected scheme of communications, specifying a waterway to transport marl from the Sancerrois, the region to the east.<sup>4</sup> A more detailed scheme of improvement based on just such a canal from Sancerrois had for long been suggested by Soyer.<sup>5</sup> As well as irrigating a considerable area it would principally serve

for the transport of marl from around Aubigny and Blancafort. A cubic metre of marl at Aubigny cost 2 francs, while at 8-12 km. distance it had risen to 6-8 francs, so high were transport costs. Furthermore, about 15 cubic metres were required to marl each *arpent* (about 1.25 acres). If such a canal proved to be too expensive, Soyer suggested the canalization of the Grande Sauldre river, either scheme profiting from integration with a network of railways. These two early nineteenth-century projects would appear to have been the direct precursors of the Canal de la Sauldre.

Pleas for a more organized effort at improvement of the whole Sologne were to some extent answered in 1848 when the central government set up the *Service Spécial de la Sologne* as a regional amalgamation of the public works authorities of the three departments of Loiret, Loir-et-Cher, and Cher to cover their *solognot* sections as one administrative unit. In part, the Sologne was benefiting accidentally from a state political move in which the real function of the *Service Spécial* was to look after the *Ateliers Nationaux* in the area in an attempt to direct unemployed and potentially revolutionary workers away from Paris by using them in public works constructions. To this end 4,000 francs were granted in May 1848, to begin studies of a canal project across the Sologne, and some rather haphazard initial excavations were started.<sup>6</sup> By October 1848 these works had been completely abandoned, but the *Service Spécial* continued and was to make a significant contribution in the area.

Numerous studies were made by these public works authorities for canal schemes, frequently based on a major canal linking the Loire and the Cher through the Sologne. A report in 1852 (table 1) showed the proliferation of these schemes.<sup>7</sup> To this list one could have added the Canal du Berry which had been opened in 1835 along the Cher Valley,

<sup>1</sup> P. Guillaume, *La Sologne au cours des siècles*, 1954, pp. 48-53, quoting British Museum, Arundel MSS. No. 263, fol. 207v.

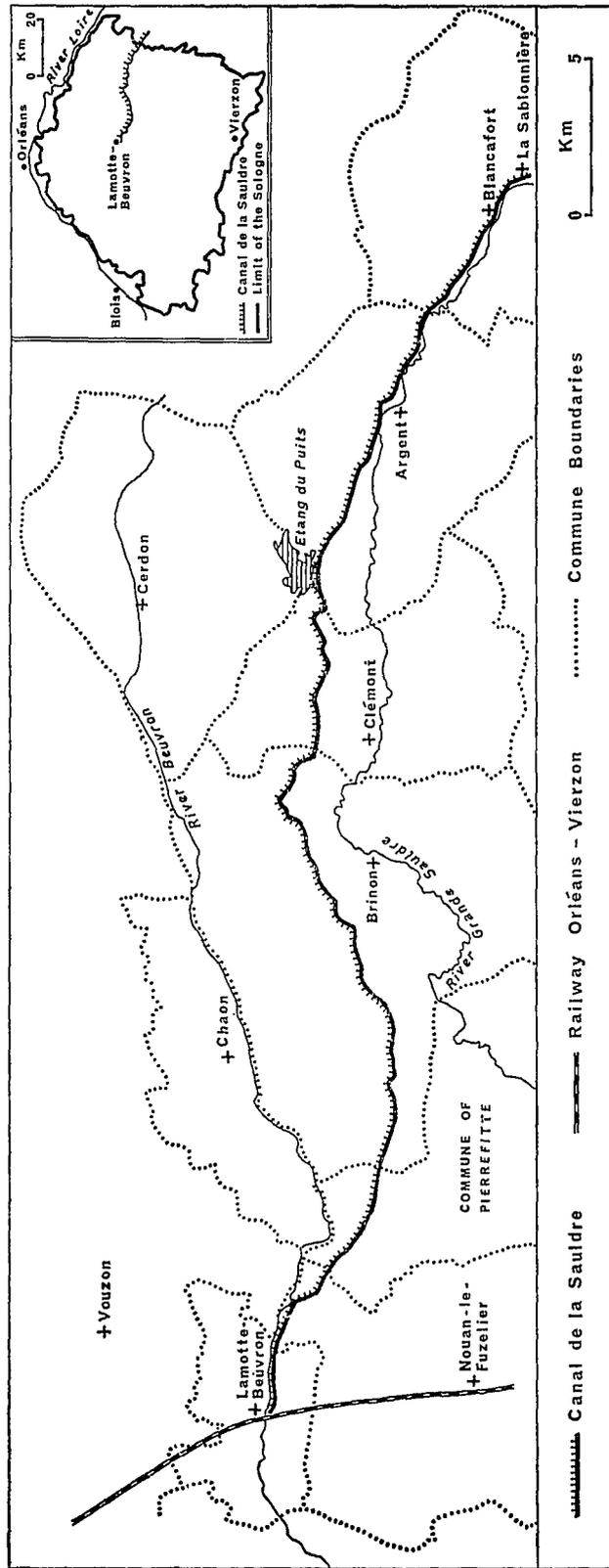
<sup>2</sup> Guillaume, *op. cit.*, p. 53. <sup>3</sup> L. d'Autroche, *Mémoire sur l'amélioration de la Sologne*, 1787, p. 73.

<sup>4</sup> M. Bourdon, *Mémoire sur la situation agricole de la Sologne*, 1840.

<sup>5</sup> Capt. Servier, *Mémoire sur la partie est de la feuille de Gien*, 1839. Archives du Ministère de la Guerre, M.R. Reconnaissance 1253.

<sup>6</sup> Archives Nationales, Paris (hereafter A.N.), F10-2348-1.

<sup>7</sup> A.N. F10-2346-7 Rapport sur l'amélioration de la Sologne d'une Commission composée de MM. Frissard, Robinon, Avril, Gayan et Darcy, 29-4-1852.



The Canal de la Sauldre.

but this was really only peripheral to the Sologne. Of these schemes the report placed the Canal de la Sauldre first in order of priority.

TABLE I  
CANAL PROJECTS IN THE SOLOGNE, 1852

	Length (km)	Estimated cost (thousand francs)
Grande Canal	151	17,500
Rigole du Cosson	56	1,100
Rigole du Beuvron	40	450
Rigole du Néant	35	350
Canal de la Sauldre	36	2,000
Ceinture supérieure	60	900
Ceinture inférieure	50	700
Canal de la Rère	68	2,000
Canal du Barageon	22	
	518	24,900

These canal schemes were not without their contemporary opponents. Gaugiran thought it a retrograde step to develop canals in the Railway Age. By returning to the ideas of Leonardo da Vinci, he forecast that the state would involve itself in large capital outlays which would result in little, if any, financial profit.<sup>1</sup> Quoting the example of the successful improvement of the Dombes region, Gaugiran advocated, instead, the creation of a network of agricultural roads, which he considered as "l'alpha de toute révolution agricole."<sup>2</sup> In the 1860's this viewpoint was to prevail but not without one attempt to put a canal scheme into practice with the construction of the Canal de la Sauldre.

The abandoned workings of the 1848 *Ateliers Nationaux* were taken up again following the granting by the state of a credit of 300,000 francs.<sup>3</sup> Between 1852 and 1859 the first section of the canal was constructed from Launay, 2 km. from the marl deposits near Blancafort, just outside the Sologne, to Coudray in the western part of the commune of Brinon, Initi-

ally it followed the Sauldre as far as Brinon where it crossed over to the Beuvron Valley using the Etang du Puits as a reservoir. Soon after the completion of this section, the grand canalization scheme was abandoned as being too costly, and in 1861 the idea of a network of local roads superseded it. Consequently the extension of the canal westwards to the railway was replanned, taking a more northerly line from the original scheme. It was not until 1869 that the second section of 13 km. was opened extending the canal as far as Lamotte-Beuvron, a total length of 43 km.<sup>4</sup> A further wait of several years until 1873 was necessary for the construction of a short line from the *quais* of the canal to those of the railway station.<sup>5</sup> Even so the cost of transshipment was to be so high as effectively to bar the use of canal-borne marls beyond the railway line. At the other extremity the starting point of the canal was extended slightly in 1885, from Launay to the *Hôpital de Blancafort*.<sup>6</sup>

The primary basis of this canal scheme was to transport marls cheaply into the central communes though Machat, the Director of the *Service Spécial de la Sologne*, originally included large-scale irrigation in his general scheme of improvement. For the provision of this marl the state purchased in 1858 an area at Launay and encouraged private and public workings. Prices were fixed along the canal at between 1.85 francs and 2.60 francs per cubic metre, according to distance.<sup>7</sup> As well as state initiative local efforts were often made to guarantee the unloading of marl at various points along the canal. Thus, in 1859, the inhabitants of the commune of Chaon campaigned for the establishment of a station on the canal near the Vicil-éprouvé lock so as to avoid the poor roads and the longer route to the station at Brinon.<sup>8</sup>

By 1870 there was a fleet of twelve boats operating on the canal, each with a capacity of about 100 cubic metres.<sup>9</sup> Traffic along the canal gradually increased, especially in the early

<sup>1</sup> E. Gaugiran, *Vues de Sologne, Sa renaissance*, 1857, p. 105.    <sup>2</sup> Gaugiran, *op. cit.*, p. 123.

<sup>3</sup> A.N. F10-2347-8.

<sup>4</sup> C. Moindrot, *La vallée moyenne de la Sauldre et la Sologne d'Aubigny*, Diplôme d'Etudes Supérieures, 1950, p. 72. G. Devailly, *L'œuvre du Second Empire en Sologne*, Diplôme d'Etudes Supérieures, 1947, p. 47.

<sup>5</sup> E. Gaugiran, *Coup d'œil d'un protectionniste sur les travaux publics en Sologne*, 1878, p. 4.

<sup>6</sup> Moindrot, *op. cit.*    <sup>7</sup> H. Sainjon, *Résultats dus à l'intervention de l'Etat en faveur de la Sologne*, 1873, p. 18.

<sup>8</sup> A.N. F10-2356-A1.    <sup>9</sup> Gaugiran, 1878, *loc. cit.*

1870's after the opening of the second section, as table II shows. The sudden jump in 1874 of more than 12,000 tonnes was largely due

TABLE II  
ANNUAL TRAFFIC ON THE CANAL DE LA SAULDRE,  
1866-74<sup>1</sup>

tonnes		tonnes	
1866	9,678	1871	16,864
1867	10,087	1872	24,720
1868	14,343	1873	21,515
1869	7,813	1874	34,172
1870	11,444		

to the fact that M. Masson who owned the greater part of the marl workings at Launay had finished installing equipment there and could greatly increase production.<sup>2</sup>

The bulk of the goods carried on the Canal de la Sauldre consisted of marls, and, by way of comparison, table III is of merchandise other than marl entering into the traffic. The canal's

TABLE III  
ANNUAL TRAFFIC IN MERCHANDISE OTHER THAN  
MARL, 1871-5<sup>3</sup>

tonnes		tonnes	
1871	1,712	1874	3,002
1872	4,700	1875	1,541
1873	2,515		

contribution to the economy was thus mainly in terms of agricultural improvement. As the details of the merchandise carried in 1874 (table IV) demonstrate only a minute proportion was taken by local products other than

TABLE IV  
MERCHANDISE CARRIED ON THE CANAL DE LA  
SAULDRE IN 1874<sup>4</sup>

	tonnes	%
Marls	31,170	91.22
Construction materials	1,863	5.45
Timber for fuel	290	0.84
Building timber	33	0.10
Various other goods	816	2.39
	34,172	100.00

marl. In accordance with this breakdown the bulk of the traffic was westwards, into the Sologne, as table V indicates.

Really the influence of the canal was limited to the zones along its banks within which it was economic to transport the marl in wagons. Although the Lamotte-Beuvron terminal was linked to the railway by *une rampe ferrée* in 1873, this did little or nothing to extend the canal's influence, largely because at the same time the state subsidy on railway-borne marl was removed.<sup>5</sup> This plus the cost of transshipment at Lamotte-Beuvron meant that the rich Blancafort marls were never able to penetrate the Sologne beyond the railway. Indeed, by 1880 it is doubtful if the marls were much used beyond a band two or three kilometres wide on either side of the canal.<sup>6</sup>

In terms of cost-effectiveness the Canal de la Sauldre was a poor investment for the state. Gaugiran calculated that by 1878 the whole venture had cost the state some 8,500,000 francs for studies, construction, wages, interest on capital, etc., and that, on the figures then

TABLE V  
TRAFFIC MOVEMENT IN 1874 ON THE CANAL DE LA SAULDRE<sup>7</sup>

Direction	Absolute tonnage	Number of boats			Average tonnage of loaded boats	% of empty boats in total traffic
		loaded	empty	total		
Westwards	33,508	644	—	644	52.03	0
Eastwards	664	47	597	644	14.13	92.7

<sup>1</sup> Archives Départementales du Cher (hereafter A.D. Cher), S.2009, Situation du service au 15 juin 1875 (Conseil général du Cher), Rapport de l'ingénieur ordinaire.

<sup>2</sup> A.D. Cher. S.2009. <sup>3</sup> Gaugiran, 1878, *op. cit.*, p. 7; A.D. Cher. S.2009. <sup>4</sup> A.D. Cher. S.2009.

<sup>5</sup> Gaugiran, 1878, *op. cit.*, p. 5. <sup>6</sup> Moindrot, *op. cit.*, p. 73. <sup>7</sup> A.D. Cher. S.2009.

available, each cubic metre of marl shipped by the canal boats had cost the state about 27 francs.<sup>1</sup> However, the canal was to continue to be an influence in the development of this limited section of the Sologne for some time to come.

The wider theme of the improvement of land use in the Sologne during the period 1850–80, together with the role in it of better communications has been considered elsewhere.<sup>2</sup> Probably the best indication of this agricultural improvement was the reduction of wasteland, for the increase in arable was, in some communes, nullified by considerable afforestation of formerly ploughed land. Thus wasteland declined from a total of 130,000 hectares (28.3 per cent) in 1850 to 33,644 hectares (7.0 per cent) in 1880 in the Sologne as a whole. Arable land increased correspondingly from 210,000 hectares (45.7 per cent) to 275,000 (54.4 per cent). The Sologne as defined by Agabriel for these figures was slightly increased in size between these two dates. Similar progress was undoubtedly made in those communes crossed by or adjacent to the Canal de la Sauldre, but land-use statistics are incomplete especially within the Department of Cher. From 1850 to 1879 arable land increased from 33 to 47 per cent of the area of the commune of Chaon, from 44 to 59 per cent in Pierrefitte-sur-Sauldre, and from 35 to 38 per cent in Lamotte-Beuvron. Wasteland declined in the same period from 21 to 10 per cent in Chaon, from 30 to 9 per cent in Pierrefitte-sur-Sauldre, and from 11 to 0 per cent in Lamotte-Beuvron.<sup>4</sup> The latter commune was also

crossed by the Orléans–Vierzon railway which had been established as a route of cheap, subsidized marl into the heart of the Sologne from 1853. Unfortunately similar detailed statistics based on the revised evaluations of the *Cadaastre* have been destroyed for the Department of Cher and even the less reliable *Enquêtes agricoles décennales* are incomplete in their survival. Only the commune of Argent, at the extreme eastern end of the Canal de la Sauldre, can be examined in detail (table vi).

TABLE VI

EVOLUTION OF MAJOR LAND USE CATEGORIES IN THE COMMUNE OF ARGENT<sup>5</sup> (IN HECTARES)

	1848	1862	1892
Arable and artificial pasture	3,351	3,793	5,117
Woodland	429	480	425
Wasteland	1,953	550	170

Obviously the spatial effect of the marl brought along the Canal de la Sauldre was limited even within the communes cited above. Furthermore its effect was limited in time also and during the present century many of the improved fields have lapsed, along with the canal itself, into a state of disuse. However, in modern France the value of areas like the Sologne can probably be better measured in amenity rather than agricultural terms. In this respect a relict agricultural canal without the normal accompaniment of industrial eyesores can still represent a valuable resource for the French countryside.

<sup>1</sup> Gaugiran, 1878, *op. cit.*, p. 8.

<sup>2</sup> K. Sutton, 'The Reduction of Wasteland in the Sologne—Nineteenth Century French Regional Improvement', *Institute of British Geographers Transactions*, 52, 1971, pp. 129–44.

<sup>3</sup> F. Agabriel, *Mise en valeur de la Sologne*, 1942, p. 40.

<sup>4</sup> *Nouvelle évaluation des revenus territoriaux (loi du 7 août 1850, art. 2)*.

<sup>5</sup> *Amélioration de la Sologne. Renseignements statistiques, 1848–9*, A.D. Loir-et-Cher, Series M; A.D. Loiret. 5S12. *Enquête agricole décennale, 1862; Enquête agricole décennale, 1892*.—A.D. Cher. Series M.