The Place of Sweden in Modern Economic History

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THE PLACE OF SWEDEN IN MODERN ECONOMIC HISTORY[1]

A BRIEF study of the place of Sweden in modern economic history cannot, and must not, be an epitome of the economic history of the country. It should bring into focus some of the facts of this history which have a special bearing upon the general development of our economic civilization, leaving the rest outside the picture. At most, three groups of characteristics can be included. First and foremost, those factors which have had a direct influence upon international developments must be considered. Next, differences from the general course of events are of interest, in so far as they explain, by way of contrast, what has taken place in other countries. Thirdly, the cases where Swedish materials can throw light upon developments which are fundamentally identical in different countries, but which can be best studied from Swedish sources, should be considered. Within the narrow limits set by the exigencies of space I shall try to throw light upon these three sets of factors.

I

It is clear that the agrarian system of Sweden did not from the beginning differ materially from that of other Germanic countries. But the agricultural character dominating all Europe in the early Middle Ages was retained much longer in Sweden than in the West and South. In particular, the growth of the towns was very slow and to a great extent only nominal, as town privileges were given to communities of a more or less agrarian type; on the basis of the assessments rolls of a war indemnity tax of 1571 the town population can be estimated at 5 per cent. of the total;[2] and as late as 1850 the official figure was

[1] The first article in this series, "The Place of the Netherlands in the Economic History of Mediæval Europe," by Professor H. Pirenne, appeared in Vol. II., No. 1.

[2] Hans Forssell, *Sverige*, 1571 (Stockholm, 1872, 1883), 324-48.

no more than 10 per cent. But the richness of the country in mineral resources caused the rise of a mining population, possibly as early as the twelfth century. Still, the agricultural proportion of the population in the second half of the sixteenth century was probably no less than 91 per cent. of the total. And the disposal of land, as well as agricultural methods, remained very primitive well into the nineteenth century. Enclosures were practically unknown before the second half of the eighteenth century, and even the three-field system represented an improvement which had not been reached in many provinces. So far there is little to be learnt of a general character from Swedish agricultural or agrarian history. But none the less the development of Sweden in this field presents one feature of very great interest. This is the continued existence of peasant proprietorship and a free peasantry. The two critical periods of this development were the end of the Middle Ages and the seventeenth century. In both periods there arose a strong aristocracy, constituting a danger to the independence of the peasants; and it is truly remarkable that it proved eventually unable to alter the fundamental character of the situation. Political conditions in both cases contributed to this result, though it is not impossible to find economic causes contributing also.

Perhaps the most important reason of an economic character was a feature which constituted a difference between Sweden and the more thickly populated countries of West and Central Europe. This was the extension of the wooded parts of the country and, generally, the sparseness of agricultural plains in the North, and even partly in the middle and southern parts of Sweden. For the forest lands and even the belt of mineral resources in the middle of the country offered small inducements to landholding on a great scale. The peasants and miners in these districts were a sturdy race, and they proved the backbone of a series of risings against the Scandinavian kings and their adherents among the aristocracy in the fifteenth century. The unusual thing is that these risings proved successful. The victory of the party of peasants and miners became decisive when Gustavus Vasa, in the 1520's, with their aid finally dissolved the Union with Denmark and Norway and laid the foundation of modern Sweden, making use in the first place of all sorts of low-born scribes and soldiers for the purposes of his new administration. But it must be added that even before that the conditions were less favourable to a development akin to that of most other Germanic countries than might have been expected.

The reason for this was the absence of Feudalism from Sweden, almost from beginning to end. Of course this requires an explanation in its turn; but it cannot be given in this place, and is still partly

unknown. It is especially noticeable that Sweden never saw any creation of fixed fiefs, and that there was never anything even approximating to a disruption of the kingdom, any creation of boundaries and obstacles to commerce between different provinces or parts of the country. For an economically backward country, as sparsely populated and as badly equipped with natural means of communication as Sweden, this is truly exceptional; and it explains a great deal of its later development, giving it a similarity to England which cannot be explained from any identity in natural conditions.

The new danger to an independent peasantry came after the Thirty Years' War, and had a great deal to do with the participation of Sweden in the war. First, the war led to a great influx of a foreign nobility, mostly of German extraction, who of course imported their inborn ideas of the proper place of the peasants in a well-ordered community. But to a much greater extent it had its root in the financial exigencies of the government, on account of a foreign policy which taxed this poor, backward and sparsely populated country to the utmost. As an expedient, not only were Crown lands very largely sold to the nobility, entailing the transference of the farmers' rents from the State to private aristocrats; much more important was the fact that the taxes falling upon the lands of independent peasants were also sold. Since the State, as being entitled to tax the peasants, was to a great extent considered as a sort of superior owner of the soil, holding what was called *dominium directum*, and leaving only the *dominium utile* to the peasant—a doctrine which was of course influenced by feudal ideas—the right of the State as a superior landowner thus became transferred to the nobles who purchased the right of taxation.

But by this time the Swedish peasantry had already acquired a great deal of political power; and, besides, they received powerful assistance. The Swedish Diet, or Parliament (*Riksdag*), dates back to the early fourteenth century, and in the seventeenth it became definitely divided into four Estates, of which the Peasantry was the fourth. They were already articulate, and said explicitly that they knew the peasants were serfs in other countries and feared for the same fate in Sweden. Assisted by the two higher *roturier* Estates, the Clergy and the Burgesses, Charles XI., in the period from 1680 to his death in 1697, had an enormous number of the land grants of the previous reigns cancelled, and thus finally saved the peasants from the danger which had hung over them. In the nineteenth century they eventually became the most influential class in the country. Thus many different causes contributed to one of the most remarkable features of Swedish economic and social development. It has not contributed to a speedy adaptation of Swedish agriculture to the most effective methods of

food production, and so has been an important reason for the slow material progress of the country; but it certainly constitutes an interesting contrast to general European developments.

II

It was only to be expected, from what has been said, that Sweden should have shown a remarkable tenacity in retaining natural economy, for that system has always proved most deeply rooted in countries of an agrarian character. But from two points of view, or perhaps three, Swedish development in this field is of general interest to European economic history.

The first is the exceptional opportunities which Swedish materials offer for a study of natural economy. It may be questioned whether that rather primitive system can be seen at such close quarters anywhere else. This, in the first place, is due to Gustavus Vasa (1523-60). He was the typical medieval ruler in every respect, with the exception of that of organization. Everything had to be put upon paper, and every move of his subordinates had to be controlled, usually by the King himself, who was suspicious to an almost abnormal degree. He therefore created extensive archives of every description, but principally with regard to accounts. Through this, it is possible to study in the most minute detail his methods of payment, the management of his royal manors, the collection of taxes and rents in kind, and their subsequent use in supply of his servants and soldiers or, instead, their sales to the Hanseatic merchants as well as to his subjects in different parts of the country. A study of this remarkable system of economic life reveals unsuspected features inherent in natural economy.[1] Though the archives of Gustavus Vasa show the character of his own transactions in the first place, the part they played in the total economic life of the country was so predominant that there is no difficulty in discerning the features of Sweden as a whole in his days. And there can be no doubt that natural economy dominated all parts of them. Later on it becomes more difficult to follow the changes which came over private economic life in this respect, though it is clear that money economy was slowly gaining ground, subject, however, to set-backs in periods of a more than usually serious monetary confusion. But with regard to public finance it is possible to follow the history of natural economy at closer quarters; and there Swedish developments were also exceptional.

[1] Heckscher, "Natural and Money Economy as illustrated from Swedish History in the Sixteenth Century," *Journal of Economic and Business History*, iii. (November, 1930), 1-29.

The great rulers of Sweden in the first part of the seventeenth century, Gustavus Adolphus and his Chancellor Oxenstierna, who became his virtual successor as the leading spirit of the long Regency after the King's death, laboured consistently for the introduction of money economy in public finance, partly on principle, but probably in the first place on account of the necessity of payments in money in the long wars upon the continent of Europe. The alienation of Crown lands and taxes upon the land, mentioned before, were part of this scheme, and in the State Council in the following period it was said that the King and his Chancellor did not care whether the Crown were in possession of "a single candle-stick." In the Diet of 1650, when the *roturier* Estates protested against the alienation of Crown lands, they entered upon an elaborate refutation of the idea that it would be to the benefit of the State to have money payments in lieu of its time-honoured income in kind. And the upshot was that the old order was reinstated, through the remarkably consistent, though rather narrow-minded, policy of Charles XI.; so that the public finances became firmly rooted in natural economy. In accordance with the rationale of the financial system of natural economy, this meant that particular sources of income had to be reserved for particular groups of expenditure—*i.e.*, were made into separate "funds," the unity of the budget being broken up altogether. The most permanent part of this system referred to the army. The soldiers were planted on the land, mostly upon peasant holdings, which the peasants of each district had to deliver in lieu of their taxes to the State. Like natural economy as a whole, this was a very old system, but it was now carried out in a methodical fashion previously unheard of; and it showed exceptional vitality. The system was not entirely swept away before the beginning of the present twentieth century; and therefore natural economy has dominated Swedish public finance probably more tenaciously than that of any other country of the same standard of civilization.[1]

It might have been expected that this system of public finance would have worked in the direction of disintegration of the unity of the country; for such is the usual effect of natural economy.[2] But as a matter of fact nothing of the sort did occur, and there were several reasons for it, though none of them in very good accord with the economic interpretation of history.

With regard to the reign of Gustavus Vasa, the explanation to a great extent was the acquisitiveness of the King; he is a living refutation

[1] Heckscher, "Naturahushållning," *Ekonomi och historia* (Stockholm, 1922), 82-97.

[2] *Cf.*, *e.g.*, Georg von Below, *Der deutsche Staat des Mittelalters* (Leipzig, 1914), 336 *seq.*, 347.

of the ridiculous idea that a love of gain is a product of "capitalism." The economic principle, adapted to the King's personal interests, has had few more ardent votaries in practice, and the result was a remarkable tendency to economic unity within the country. For while the rulers of most countries at that time put obstacles in the way of movements of foodstuffs between different provinces, and thereby created that oscillation between scarcity and excess which was the ordinary state of things on the Continent before the French Revolution, Sweden was made into one single market with regard to the most important group of commodities, through the frankly mercenary spirit of Gustavus Vasa. He always wanted to send his cereals, butter, pork, fish, etc., to the places where they could fetch the best price. This certainly contributed to preventing an increase in the restriction of inter-provincial trade.[1] But another factor came to assist in the seventeenth century. That factor is a counterpart in a positive sense to the absence of disrupting influences. The administrative system of Sweden was built up with unusual care in the seventeenth century, and proved one of the great assets of Sweden ever afterwards, being, as far as one is able to judge, superior to that of most other countries in efficiency, law-abidingness, and honesty—no great compliment, it is true, for the situation was pretty bad almost everywhere else, with the possible exception of Brandenburg-Prussia. As in France, but in marked contrast to England, the government had at its disposal a great body of officials, and it was able to give much more effect to its decisions than in France. Perhaps the most remarkable instance is the development of the customs system. It is well known how unable the Continental governments were to create unity in that field inside their own countries. In France, for instance, even an administrator of exceptional genius and intensity, like Colbert, had to be satisfied with unifying one-third of the territory of Louis XIV.; and the conquests of Henry II., made about the middle of the sixteenth century, were treated as not belonging to France at all, from the point of view of customs, for upwards of two centuries and a half. But in Sweden the customs barriers between her old territory and the numerous contiguous provinces acquired in the course of the seventeenth century were taken away almost from the beginning; and all of them had disappeared long before the end of the century. It is easy to see what that meant to a country in which the natural obstacles to commerce were as great as in Sweden.

[1] Heckscher, "Vasakonungadömets Ekonomiska Politik och Ideer," *Historiska Studier tillägnade Ludvig Stavenow* (Stockholm, 1924), 82-85.

III

Swedish economic life was of small importance to Europe before the seventeenth century. The Baltic was the hunting-ground of the Hanseatic merchants, and whatever commercial relations there were with the outside world were in their hands. Gustavus Vasa put an end to this, in so far as it could be done, by taking away their privileges. But the actual consequences of this famous act were insignificant, in spite of what has been generally believed. For, in the first place, the part played by foreign trade in the economic life of Sweden in the sixteenth century amounted to very little. In a country where more than nine-tenths of the population were engaged in agriculture it was out of the question that foreign trade could have been of any importance, and the figures for its ingredients directly prove it. As to imports, for instance, there was only one commodity of real necessity—*i.e.*, salt—which represented upwards of one-fourth of the total import value; and probably one-third of that value had to be classed as luxuries, of importance only to the Court and the aristocracy. Secondly, the trade of the country continued to go to the ports of North Germany throughout the sixteenth century; against five to nine vessels going to the Low Countries, there were thirty-five to fifty-five plying the trade with the North German Baltic ports.[1] It is possible that the Swedes were able to exchange goods at a slightly more favourable rate, through their ability, after the cancellation of the Hanseatic privileges, to call in merchants from other parts, mostly Dutchmen; but as they did not do this to any appreciable extent, it is impossible to consider it as a factor of any importance. The action of Gustavus Vasa, as well as of his ally, Christian III. of Denmark, meant a great deal with regard to later developments, though it appears clear that the general decline of German trade, and the spectacular rise of Dutch commerce and shipping, was of much greater importance to Scandinavian economic life in this respect than any isolated action of these latter countries themselves.

But the reign of Gustavus Adolphus created an altogether new situation. From one point of view the new issues can be studied from the accounts of the dues levied by the Danes in the Sound. The editor of the first part of this series, the late Mrs. Nina Ellinger Bang, in one of her introductions, speaks of the " almost miraculous expansion " of Swedish trade in the reign of Gustavus Adolphus.[2] To a great extent

[1] All these figures are based upon the customs records worked up in Forssell, *Sveriges inre historia från Gustaf den förste*, ii. (Stockholm, 1875), but further analyzed by the present author.

[2] *Tabeller over Skibsfart og Varetransport gennem Øresund*, 1497-1660, i.-ii. (Copenhagen, 1906, 1922); *Tabeller over Skibsfart og Varetransport gennem Øresund*, 1661-1783, *og gennem Storebælt*, 1701-1748, i. (Copenhagen, 1930).

this simply meant a change in the direction of Swedish navigation, which brought it into the purview of the Danish customs officials at Kronborg in the Sound; this changed direction represented a great increase in the relations between Sweden and the North Sea coast, especially Holland. But much more important was the growth of Swedish foreign trade as a whole and its prerequisite, a growth in production; and that also can be studied in the accounts of the Sound, at least when compared with Swedish sources referring to production and exports from the country.

The most important change in Swedish economic life in the early seventeenth century, especially from a European point of view, was concerned with copper, and the reaction from political conditions was particularly great in that connection. It will, however, be necessary to go back a little in order to explain the situation. The only copper-mine of importance in Sweden, the Stora Kopparberg (Great Copper Mountain), probably was organized in the 1280's, upon lines which were clearly borrowed from the German Rammelsberg in the Harz mountains. This organization has lived on, without a break, though with great changes in fundamental conditions, until this day, the present company of the place, the Stora Kopparbergs Bergslags Aktiebolag, priding itself upon being " the oldest company in the world."[1] Exports began during the Middle Ages, and went on during the sixteenth century; but their importance was slight in comparison with what they were to become, and the impetus was given through the need of the State for foreign payments.

In 1613 Sweden had finished an unsuccessful war with Denmark, and had had to agree to pay an indemnity of one million rixdollars (practically equivalent in silver content to the same amount of American silver dollars of the nineteenth century) in order to get back her only port on the North Sea, Elfsborg. The amount appeared enormous in the eyes of the time, and the " transfer problem " was thorny, as the coin in question had no, or at least very small, currency inside Sweden. The system decided upon then became to monopolize the sales of copper from the mine in the hands of the State; to use the proceeds of an indemnity tax to pay the miners; and, lastly, to sell the metal to merchants against silver dollars, which they had to bring in from the Continent, through their sales of copper there. The accounts of these transactions make extremely suggestive reading, giving everything down to minute details, and consequently throwing much light

[1] The company has taken the initiative in extensive studies of its past, and two volumes (Sven Tunberg, *Stora Kopparbergets Historia. Förberedande Undersökningar*, Upsala, 1922; and Tom Söderberg, *Stora Kopparberget under Medeltiden och Gustav Vasa*, Stockholm, 1931) have carried the story down to 1560.

upon the whole system of Swedish commercial life in the beginning of the seventeenth century.[1] After that, the exports of copper became a central factor in Swedish economic life throughout the seventeenth century, and had a great deal of influence, both politically and economically, upon general European developments.

In absolute figures the amount of Swedish copper production was of course altogether insignificant, when measured upon modern standards; its maximum, which was reached in 1650, was 3,000 tons, while the figure for the United States in 1929 was more than one million tons, the Swedish seventeenth-century maximum being consequently less than 0·3 per cent. of the present-day American maximum.[2] But it was not only that Swedish production doubled in the second quarter of the seventeenth century; much more important is the fact that it dominated European production as a whole. To prove this through figures is rather difficult, it is true; and estimates of the total production of copper in the seventeenth century—such as that placing it between 4,000 and 10,000 tons[3]—are little more than guesses. But irrespective of this, everything points to the conclusion that Swedish copper dominated the market. An amusing letter in 1628, from Oxenstierna to the Swedish minister in Transylvania, contains a proposal that the two countries should create a Protestant monopoly of copper, in order to counterbalance the monopoly of silver in the hands of the Catholic powers, and, besides, exercise a moral influence, *cupiditatibus mortalium moderandis*.[4] Of the great influence exercised in the sixteenth century by the copper production of the German principality of Mansfeld little is heard in the seventeenth century. The copper industry of England was in a poor condition under the domination of the Mines Royal and Mineral and Battery Works companies, entirely unable to compete not only with Swedish copper but even with Swedish brass, in spite of the fact that the zinc ore (" calamine stone "), indispensable to brass production, came from England; this situation did not change before the end of the century, when the English copper-

[1] The accounts form a series in the Archives of the Treasury (*Kammararkivet*), but have not yet been made the subject of a published study. The present writer, however, will shortly write an essay upon the whole transaction in the *Ekonomisk Tidskrift*.

[2] Figures from the official rolls, reduced to modern weights, in F. R. Tegengren and others, *Sveriges ädlare malmer och bergverk* (Stockholm, 1924), 31-41. They may be considered as reliable within reasonable limits.

[3] J. H. L. Vogt, " Die Statistik des Kupfers," *Zeitschrift für praktische Geologie*, 1896, 91.

[4] " Habent hi duo Principes maximam cupri partem totius Europæ in sua potestate, ac si conspirent et consilio se mutuo juvent, possunt id orbi obtrudere, sub quo pretio placuerit." *Rikskansleren Axel Oxenstiernas Skrifter och Brefvexling*, First Series, iv. (Stockholm, 1909), 196 *seq.*

mines ceased to be considered as "mines royal."[1] In the 1690's, when the Swedish copper production was already forty years past its zenith, one of the best-informed Swedish officials in the mining service, Erich Odhelius (later ennobled under the name of Odelstierna) was sent out upon a lengthy tour of observation to almost all European countries either producing or importing metals; and his extensive report probably represents the best expert knowledge of the time. About copper he sums up the situation in the following words: "For copper production Sweden of old has been like a mother; and though some quantities are brought out in several places within and outside Europe, still they are mightily small when compared with the exuberance which is furnished by Sweden."[2]

Copper met with a great deal of demand early in the seventeenth century, on account of the copper or "vellon" standard of Spain. When that ceased, which was before the death of Gustavus Adolphus in 1632, the metal was used principally for brass cannon, for roofs, for cooking utensils, and for different articles made of brass. It was often believed in Sweden that total demand was slackening, but that must be considered doubtful, as prices appear to have been remarkably steady over longer periods, in spite of fluctuations from year to year.

The situation was worked for everything that it was worth by the Swedish statesmen, and even beyond that. The part played by the country in the Thirty Years' War was largely financed by copper exports, and without them it is hard to say how the war could have been carried on. The copper was sold in North Germany and, principally, Amsterdam; and the sales served as a basis for bills of exchange, which constantly had to be met, and very often could not be. When there were no ready sales, other expedients had to be resorted to, and often unfortunate ones. In many cases copper was mortgaged for loans in the hope of better prices later on; and these hopes were seldom fulfilled. This gave Gustavus Adolphus the idea of making direct use of the metal for purposes of coining, as it enabled him to dispose of ready money for internal purposes at least; to some extent he made use of this mode of payment in occupied territories too. The consequence was that Sweden in the 1620's saw the introduction of a copper standard, besides the silver standard existing of old; in other words, a double standard consisting of silver and copper, with

[1] See for Mansfeld: Walter Möllenberg, *Die Eroberung des Weltmarkts durch das mansfeldische Kupfer* (Gotha, 1911); and for England: Henry Hamilton, *The English Brass and Copper Industries to* 1800 (London, 1926).

[2] The report of Odhelius is still unpublished, and the original appears to have been lost; but there are contemporary copies in the archives of the old Board of Mines (*Bergs-Collegium*), now forming part of the Public Record Office (*Riksarkivet*), as well as in the Royal Library of Stockholm.

a fixed ratio between them, so that "one dollar silver money" and "one dollar copper money" were to be equivalent. But the difficulties inherent in a double standard appeared with a vengeance in this case. For, as the coining of copper was resorted to when sales were slack, it was constantly valued too highly as a coin. The reckoning in copper money therefore had to be raised continuously, as compared with silver money, until three dollars copper money became the fixed equivalent to one dollar silver money; in fact, silver money mainly disappeared, and connotations in silver money came to mean simply three times the same number in copper money. This system remained a reality until the 1740's and on paper until 1776.[1]

Incidentally, this unwieldy money led to a result which undoubtedly gives Sweden a place by itself in modern economic history. I refer to the creation of the first fully developed bank-notes in Europe. One of the most common monetary denominations, the so-called "plåt" (plate), or two dollars "silver money" in copper, had a weight of no less than 3·62 kgs., or almost exactly 8 lbs.; and it is natural that it must have led to untold inconveniences. Now, in 1656, a Livonian of Dutch extraction, Hans Palmstruch, acquired a privilege for erecting a bank in Stockholm, principally upon the lines of the Bank of Amsterdam, and in 1661 he conceived the idea of giving out bearer notes, without any reference to a deposit; the prototype were drafts given in payment of copper by the Stora Kopparberg Company. The new notes were hailed with pleasure, as limiting the circulation of the copper "plates," and they even went to a premium as against coin. Unfortunately, however, an over-issue set in after two years, and in 1664 the bank-notes were discontinued. The Palmstruch Bank was formally taken over by the State, or, more correctly speaking, by the Diet, in 1668, as the Bank of Sweden, which is still governed by directors chosen principally by Parliament and responsible only to it. The early note-issue disappeared without leaving any trace, and may have been unknown when the bank-note came to stay in other countries towards the end of the century.[2]

[1] The literature on this subject in Swedish is extensive, though not very well digested. For sources, reference may be made to A. W. Stiernstedt, *Om Kopparmyntningen i Sverige* (Stockholm, 1863-64), and K. A. Wallroth, *Sveriges Mynt*, 1449-1917 (Stockholm, 1918), though both are mainly numismatic. The treatment of sales can perhaps best be studied in E. W. Dahlgren, *Louis De Geer*, 1587-1652 (Upsala, 1923), i. 180-250. The letters and papers of Oxenstierna, partly published in his *Skrifter och Brefvexling*, are of course full of the subject; a memorandum of 1630 by the Chancellor (printed *op. cit.*, First Series, i. 344-50) shows remarkable perspicacity.

[2] Sven Brisman, *Sveriges Riksbank*, 1668-1918, i. (Stockholm, 1918). This is the first volume of five, by various authors, covering the total history of the Bank of Sweden until 1924.

To return once more to the Swedish copper industry, it lost a great deal of its importance towards the end of the seventeenth century, principally owing to a depletion of the Stora Kopparberg mine. But it had made a lasting contribution to the history not only of Sweden but of Europe in general, by financing the part played by Sweden in the momentous wars of the seventeenth century.

IV

Copper found a successor which was to become of much greater importance both to Europe in general and Sweden in particular. This was iron.[1] In the Middle Ages iron, in Sweden as elsewhere, was made directly from the ore. The Swedish iron made upon this direct process came to be called Osmound (Osmund) iron, a word of unknown origin. A certain amount of this iron was exported, especially to North Germany, from whence it found its way to other places.[2] The blast-furnace, however, was introduced in the fifteenth century, if not earlier, which meant the rise of an indirect process, making non-malleable pig-iron from the ore, and consequently necessitating a second process for transforming pig-iron into malleable iron. At first this was clearly done in the tiny old ovens which had been used for Osmound iron; but in the first part of the sixteenth century the iron forge came to Sweden, to a very great extent through the direct action of Gustavus Vasa himself, who was not only the principal landowner, farmer, and general merchant of his country, but who was also by far its most important ironmaster. Like the previous improvements, the new method came from Germany, and it was known for centuries as "German forging." Gustavus Vasa was very anxious to substitute iron made by the new process, called bar-iron, for Osmound iron in Swedish exports; and though he was of course unable to carry out such a change in his own lifetime, the prohibition of exports of Osmound iron made in the 1620's must have been effective, for it disappears from the Danish accounts of the Sound tolls from that time. Shortly afterwards came a new change, which created the situation characteristic of the Swedish iron industry in its halcyon days. Differences in quality usually mean more in periods of primitive technique than later on, because what is called technical improvement largely consists in being able to make use of inferior but more

[1] See for the following, Heckscher, "Un grand chapitre de l'histoire du fer: le monopole suédois," *Annales d'histoire économique et sociale*, iv. (March and May, 1932), 127-39, 225-41. As the review of the sources in this article gives further information, references to the extensive literature on the subject as a rule are omitted here.

[2] A. Lilienberg, "Sveriges Bergshantering under Medeltiden," *Jernkontorets Annaler* (1919), 135.

plentiful materials. And Sweden had access to the purest iron ores in existence—*i.e.*, those containing the smallest amounts of phosphorus and sulphur. Especially was this the case with the ores of the Dannemora district, to the north of Stockholm; after having unsuccessfully been worked for silver, the mines proved an immeasurably greater boon as a source of iron ore. But this required an improvement in the metallurgical processes, which came about in the 1630's.

Again this improvement was due to a foreign influence, though this time not from Germany, but from the Low Countries. Foreign influences have never, even approximately, meant as much to the development of Sweden as in the seventeenth century, the period of her greatest political expansion; and it was only to be expected that the teachers of all Europe in economic matters at that time, the Dutch, should exercise a particularly strong influence in a country like Sweden, which was, on the one hand, very primitive in economic conditions, and had, on the other hand, acquired a political position which brought it into very close relations with the Low Countries. With regard to iron, Holland, however, was only partly responsible, the southern Netherlands counting for very much. The leader in the new departure was a Liégeois of the name of Louis De Geer, who had left his native province and had become a very successful merchant at Amsterdam. He was brought into contact with Sweden for different reasons, but principally as a financier, negotiating the sales of copper and procuring loans for Gustavus Adolphus. From this he developed an interest in practically every department of Swedish economic life, and became by far the most influential merchant Sweden has ever seen; like most of the leading foreigners, he was made a Swedish nobleman, and he founded a family which has played a great part in Swedish history until this day.

Among other things De Geer introduced a number of expert ironsmiths from his native Bishopric of Liége; and though the number of families transferred has been estimated at no more than 300, they became the originators of a new departure in the most famous of Swedish historical industries. The immigrants were mostly French-speaking Walloons, and after them the new method of forging came to be called "Walloon forging." This was applied in the first place to the fine Dannemora ores, and that district became the producer of the famous "Orground" or "Arground" iron, which was named after its place of export, the small town of Öregrund. The old "German forging" retained its hold upon the industry in most other parts of the country, being preferable for many purposes; but the immigrants left their mark upon the blast-furnace or pig-iron process too, irrespective of the character of the forging process applied to the iron

afterwards. The Walloons introduced what was called the "French furnace," which came to be used by ironmasters in all parts of the country. After these changes Sweden more and more came to be regarded as the foremost iron-producing country of Europe, a depository of the lore of iron metallurgy in its old form, before the great changes which took place in the course of the eighteenth century. The report of Odhelius, referred to above, bears ample testimony that the new situation had been created towards the end of the seventeenth century; but it became even more pronounced later on.

It is superfluous to enlarge upon this phase of the history of iron in a study intended in the first place for British readers, as the best sources for it are in English, foremost among them the customs records published more than eighty years ago by Scrivenor. As recent contributions to our knowledge have also been made by Mr. Ashton and Mr. Lipson, I shall confine myself to a brief outline in this place, though it constitutes the most remarkable part of the influence exercised by Sweden upon the economic developments in Europe.

The disappearance of the forests, not only in England, but to a smaller extent in many other countries too, made the existence of the iron industry increasingly precarious, as charcoal was almost the first prerequisite of both the pig-iron and the forging process. Inversely, the combination of great forests, pure ores, and a highly refined process gave Sweden a leading place, in quantity as well as quality. The uncertainty, or even the complete absence, of figures relating to the production of most countries makes it a very difficult task to find out the relative part played by Sweden; but of her general position there can be no question. My own estimate, referring to the 1730's, is 36 per cent. of total production of malleable iron, as a maximum, but not an improbable, figure for the part played by Swedish production; as a minimum I have given an estimate of 30 per cent. But high as these figures are, they are far too low when the influence exercised by Sweden upon European markets is considered; for most of the producing countries were unable to export iron. For the principal importing country, England, the customs figures of imports give Sweden no less than 82·5 per cent. as an average for 1711-16, and 75·2 per cent. for 1729-35. Spain counted for something in the late seventeenth and early eighteenth century, but was even then negligible as compared with Sweden, disappearing almost completely from the English market afterwards. Russia, on the other hand, was outside the picture even after the reign of Peter the Great, but grew in importance throughout the eighteenth century, until British imports from that quarter finally exceeded those from Sweden. Owing to this the percentage of Sweden fell to 62·6 per cent. in 1750-55 and to 40·0 per

cent. in 1786-99; the absolute amount imported to England from Sweden did not, however, decrease.[1]

The policy pursued by the Swedish government was very characteristic of the time, and profoundly influenced the situation. In 1633, immediately after the death of Gustavus Adolphus, the Regency introduced a restriction of production in the iron belt, in the middle of the country, partly in favour of the " nobler works " of silver and copper, but generally in the interests of forest preservation. The blast-furnaces were allowed to remain in the neighbourhood of the mines, but forges for malleable iron were to be transferred to the thickly wooded parts in the north and north-east, Norrland and Finland. As there were no iron-mines in these provinces, this meant a serious increase in cost of production; and a corollary therefore became a general restriction of output, though that consequence was not accepted for some time. In other respects the policy was made increasingly effective, however; and Charles XI., towards the end of the century, " erased " obnoxious forges in the iron belt, just as was done in England with the tobacco plantations. Throughout the seventeenth century, however, there was no stagnation in Swedish exports of iron, but quite the reverse, so that the policy can hardly be called monopolistic in its effects. The percentage of iron in the total export value of the country had been much higher than that of copper even during the most flourishing period of copper production and exports, though nobody would have been able to guess it from the place of these two commodities in the imagination of the time; and it continued to grow without interruption. For instance, in 1640 iron and steel represented 39 per cent. of the total Swedish exports, as against only 20 per cent. for copper and brass; in 1661 the percentages were 58 and 24 respectively, and in 1685, 59 and 25. At last, shortly after the death of Charles XII., in the early 1720's, the relative position of iron reached its maximum, with close upon 75 per cent. of total export value, reducing all other groups to comparative insignificance. In absolute figures, the exports were of course microscopic when compared with modern conditions; but the relative increase was very considerable, from hardly 12,000 tons in the 1630's to some 33,000 tons after the death of Charles XII., upwards of three times the first-named figure. So far, consequently, total iron exports were allowed to swell.

[1] These percentages are based upon the figures published by Scrivenor. The series of Swedish customs statistics is much more complete, covering almost every year from 1711 onwards, besides giving isolated figures for earlier years. But of course it cannot show the proportion between different countries of origin in British imports, and, besides, the figures for countries are probably less reliable than the British ones; such as they are, they give, however, invariably higher results for England as a recipient of Swedish iron than the British.

But the monopolistic tendency gained much ground during the following period, usually called the " Era of Liberty " on account of the predominance of the Diet; it is more to the point that it represented the most consistent application of mercantilist principles known to Sweden. The erection of new forges now became prohibited even outside the iron belt, and the output of each forge was stringently limited, which had never been the case before. This led to the result desired. Iron exports showed almost absolute stagnation between 1730 and 1780—*i.e.*, for half a century, at a time when the scarcity of European iron supply reached its height, the amount was 40,000 tons. The national monopoly thus created proved very lucrative, so that the Swedish ironmasters enjoyed an unprecedented prosperity. This was not confined to the forges situated in favourable positions, but embraced even the most outlying ones. Production was not concentrated in a few places; to express the situation in modern terms, the monopoly was of the type of a cartel, not of a trust.

It is certainly an interesting problem, what would have happened if the restrictive policy of Sweden had not taken place; but it is difficult to find an unequivocal answer to it. On the one hand, it is possible that Swedish forests would have followed those of other countries to perdition, without easing the general European situation to any greater extent. But as charcoal burning, given a certain amount of rational treatment, exercises a rather favourable influence upon forest growth, it might also be contended that the Swedish forests could have been saved, even if Europe had not been starved with regard to iron, in the way it was.

On the other hand, it must be emphasized that nothing could be further from the minds of Swedish ironmasters and officials than making use of the monopolistic position of the country in order to palm off inferior products upon buyers who had to put up with them. Enormous care was bestowed upon the quality of the iron, partly on account of a fear of potential competitors, partly simply because the traditions of economic policy required it. The similarity to the reglementation prevailing in other countries is apparent, though it may perhaps be said that the amount of unintelligent belief in the time-honoured methods was somewhat smaller than, *e.g.*, in the famous *règlements* of Colbert.

The whole imposing fabric crumbled to pieces after the puddling process had introduced the use of fossil fuel in the forging of malleable iron. The use of coke in the blast-furnaces producing pig-iron, invented at an earlier date, had no direct effect upon Sweden, as exports of pig-iron were prohibited; besides, it is well known how slow a progress was made with coking before the puddling process. But after

the end of the Napoleonic war the whole face of the Swedish position was changed. It soon became clear that the old methods could not go on, any more than the old system of regulation.

The work done by the Swedish ironmasters in the course of the nineteenth century towards reforming their industry in accordance with the requirements of the times met with a surprising amount of success. Every new process which could be worked satisfactorily under the peculiar Swedish conditions was introduced; but more old-time methods have been preserved than perhaps anywhere else. Almost alone among countries entirely deficient in fossil fuel, Sweden has retained an important iron industry which, though representing only a negligible amount of the total production of the world, has been able to concentrate upon the highest qualities and thereby has been kept alive. It is not unnatural to assume that this to some extent is due to the legacy of the old-time regulation, as it has prevented the ironmasters from a hopeless attempt to compete with regard to quantity, and has directed their energies to quality. Under the opposite supposition, the Swedish iron producers might, *mutatis mutandis*, have met with the fate of the handloom weavers, who tried to compete with the new methods upon lines where all the odds were on the side of the new.

V

It is a remarkable thing that the enormous Swedish forests, which were one of three deciding factors for the predominance of the Swedish iron industry, should have yielded only insignificant exports of timber and other products of wood. To a great extent the explanation consists precisely in the importance of the forests to the iron industry. For there is no exaggeration in looking upon iron as a forest product, the timber being made into charcoal and worked up into iron. In a period of very bad communications this became a natural use of timber, as it was much easier to transport in that condition than in the form of boards or deals; an interesting parallel can be found in the sales of brandy, made from cereals, when the transport of the foodstuffs themselves met with insuperable difficulties. But to these influences of a more or less unavoidable character was added the fact that the State did almost everything in its power to preserve the forests for the benefit of the metal industries. Iron had from the beginning been the Cinderella of these industries, having had to give way everywhere to the "nobler works" of silver and copper; but in the course of the eighteenth century the importance of the iron industry could no longer escape the attention of the meanest capacities, and the unwillingness to allow the sawmills to undermine this basis of Swedish prosperity

was therefore great. Besides, Norway, both through her geographical situation and through the comparative unimportance of her production of iron, was much better equipped than Sweden to supply the West of Europe, which meant England in the first place, with timber products. There was no fundamental change in this respect before the nineteenth century, though there had been a certain amount of expansion and not a little technical improvement in the Swedish timber industry between 1720 and 1800.[1]

Consequently, the Swedish timber industry was in its infancy about the beginning of the nineteenth century, the forest resources especially in the North being almost untouched; it is only owing to a remarkable ignorance of actual conditions and an uncritical belief in the complaints of official croakers that it has been possible to say that " at the beginning of the nineteenth century Scandinavia was already depleted"—fifty years before any serious timber exports from Sweden had even begun.[2] And the first half of the new century saw small progress of the Swedish timber industry. The preferential timber duties introduced in England during the Napoleonic wars hampered imports from European countries for the benefit of the American colonies, and it was only when these duties had been lowered, and finally abolished altogether, in the 1840's and 1850's, that the English market was thrown open to the Scandinavian countries. Among these, the conditions now began to favour Sweden. Her iron industry had lost its predominant position, and the system of reserving the forest riches for that industry was gradually dissolved. Steam was introduced into the sawmills from about 1850 onwards, and the great forests of the North passed into the hands of private individuals, often able as well as unscrupulous, and some of them of foreign origin—Scotchmen, Germans, and Norwegians. The background of this change of ownership is rather curious, and came to exercise a strong influence upon later developments.

According to an official legal doctrine, which had first been stated by Gustavus Vasa and had been elaborated by Charles XI., more than

[1] See for this and for what follows, *inter alia*, the following works: three writings by Bertil Boëthius, *Ur de Stora Skogarnas Historia* (Stockholm, 1917), *Robertsfors Bruks Historia* (Upsala, 1921), and " Trävaruexportens Genombrott efter det Stora Nordiska Kriget," *Historisk Tidskrift*, xlix. (1929), 273-98; further, Wilh. Carlgren, *De Norrländska Skogsindustrierna intill 1800-talets Mitt* (Upsala, 1926); two publications by Arthur Montgomery, *Industrialismens Genombrott i Sverige* (Stockholm, 1931), 87-108, 257-63, and " L'évolution économique de la Suède au XIX^{e} siècle," *Annales d'histoire économique et sociale*, iii. (1931), 356 *seq.*, 526; *Statistisk Översikt av det Svenska Näringslivets Utveckling, Åren 1870-1915*, published by the Swedish Board of Trade (*Kommerskollegium*), Stockholm, 1919.

[2] " Im Anfang des 19. Jahrhunderts ist Skandinavien bereits ausgeraubt." Werner Sombart, *Der moderne Kapitalismus*, ii. 2 (Munich and Leipzig, 1919), 1149.

a century later, "lands which are unoccupied belong to God, Us (the King), and the Swedish Crown." Consequently, the great forests of the North were looked upon as a sort of royal commons, quite distinct from the commons of the village communities. In practice this meant extremely little, as these enormous stretches of land had no pecuniary value, and the few pioneers and peasants allowed their cattle to roam indiscriminately over the great forests. But early in the nineteenth century, long before the great expansion of the timber industry had begun, the idea of the benefits of private ownership of all the means of production influenced a decision about dividing up the forests between the Crown and the peasants, with a strong bias in the direction of peasant proprietorship. This set a movement going which went on especially between 1820 and 1870, transferring enormous domains to the hands of the peasants; it was not unusual to find one small peasant becoming the owner of an area not smaller than that of a small German principality. But to the peasants this did not mean any remarkable pecuniary gain, only the satisfaction of ownership and the comparative security of pasture for their cattle. When, now, the new situation arose through the rise of a timber industry, lucrative beyond the dreams of avarice, the speculators and captains of the new industry were able to offer the peasants amounts for long leases or full proprietorship of their forests which were simply dazzling in the eyes of people who had never looked upon their ownership as being of any pecuniary value. The forests therefore went out of the hands of peasants at prices which gave the new owners or occupiers unlimited profits, while the previous owners soon came to regard themselves as defrauded. As to this was added the fact that the usually rather unimportant plots of agricultural soil, which also came into the hands of the industrial companies, were often disregarded by them, not only the existence of independent peasants, but also the existence of agriculture, was considered in danger in Norrland, the northern part of the country. After many heart-burnings, a law was passed in 1906, preventing the companies from purchasing land which was in the hands of private owners. As the great industrial concerns had at that time already acquired most of those forests which were of serious importance to them, the effects of this legislation was not, however, very remarkable.

In any case the sawmill industry became the leading one in the latter half of the nineteenth century. Already in the 1860's it passed the iron industry in export value, and in the following decade no less than 43 to 44 per cent. of total exports came from the timber industries. Though this position could not compete with the relative place held by the iron industry in its most palmy days, still the predominant part played by forest products in Swedish foreign trade had become very

marked. To some extent, however, it was the outcome of conditions which could not go on, as they meant that a forest capital which had accumulated for untold centuries was used up. Towards the turn of the century, a palpable stagnation of timber exports therefore set in. But at this moment—or even somewhat earlier—another timber industry arose which completely changed the situation. That was the pulp industry, or rather industries.

Mechanical pulp had been introduced already in the 1850's, and in the 1870's it was followed by the much more important chemical pulp. Both, of course, meant the substitution of wood fibre for rags as a raw material for paper; and they were remarkably well adapted for the Swedish forests, after they had passed the primeval stage, as the new industry did not require trees of the height in demand for sawmill purposes. One of the two methods of chemical pulp production, the sulphite process, besides, requires fir instead of pine, which was preferred by the older timber industries; and as the two are usually blended in the Swedish forests, a much more even treatment of them became possible. The development of the pulp industries has therefore been almost " American," though remarkably free from the dislocations which had followed their predecessor, the sawmill industry; between the end of the nineteenth century and the years just preceding the great depression in 1929 they increased almost tenfold in volume. There are no serious signs of this situation being in danger, for Swedish forests are usually treated so that they preserve their growing power.

The last half-century has also seen the rise of a great number of important engineering and metal industries, mostly working for very extensive foreign markets. The stagnation of the iron industry and its exports has therefore to a certain extent meant its substitution by finished iron products; though requiring much smaller amounts of iron than the iron industry itself, when compared with the value of the goods, they have been very prosperous and have influenced the economic development of the country profoundly. The same is the case, though to a more limited degree, with a change which has taken place at the other end of the scale of the iron industry, through a great rise in the exports of iron ore, beginning in the 1880's. This was the consequence of the Thomas or basic process, through which ores rich in phosphorus were for the first time made serviceable to iron production; for Sweden has great deposits of phosphorus ores, both in the middle of the country and, even more, in the farthest north; and the high iron content of the Swedish ores has made them much in demand.

But if I were to enlarge upon these questions, my paper would have to leave the domain of history and become a description of present-day

Swedish economic life. There still remains one important part of the programme sketched in the initial paragraph of this article; and in conclusion that must now be taken up.

VI

It is well known how scanty and unreliable are the figures for the growth of population in the periods preceding the industrial system of the nineteenth century. Even with regard to such a modern period as that of the Industrial Revolution in England, the figures used are more or less open to doubt.[1] Now, Sweden possesses a long series of historical population statistics which must be pronounced almost as faultless as any modern ones, stretching back at least one-half century before the period covered by the official figures of any other country. For several decades these statistics were subjected to all sorts of tests and comparisons by the leading Swedish statistician in modern times, Gustav Sundbärg; and they came surprisingly well out of the ordeal. Sundbärg also published the corrected figures in many different papers, among them one in German,[2] so that they are easily accessible, though not very extensively used.

It is true that the figures cannot throw light upon the problems of a country of strong economic expansion, like that of England in the late eighteenth century; and it is a thousand pities that nothing of the same character exists for one of the most momentous periods in the world's history. What can be learnt from the Swedish figures is something different—namely, the character of population growth before the arrival of modern industrialism; for the slow development of towns and of other occupations than agriculture, as well as the backward condition of agriculture itself, makes Sweden rather typical of the countries of Central and Western Europe at earlier stages of their economic and social history.

Population statistics in Sweden owe their existence to a couple of clauses in the law of the Church of Sweden, made in 1686, making it a duty of the clergy to register not only all marriages, births and baptisms, deaths and burials, migrations, but also the names of the total population of each parish. Beginning with the year 1749, these registers were subjected to statistical treatment, owing to the initiative of the astronomer Pehr Wargentin, secretary to the Royal

[1] See G. T. Griffith, *Population Problems of the Age of Malthus* (Cambridge, 1926), and the discussion to which it has given rise—*e.g.*, T. H. Marshall, "The Population Problem during the Industrial Revolution," *Economic History*, i. (January, 1929), 429-56.

[2] Gustav Sundbärg, *Bevölkerungsstatistik Schwedens*, 1750-1900 (Stockholm, 1907).

Society of Sciences of Stockholm; and from that the official Swedish statistics of population take their start. But already, in accordance with an order issued in 1736, the clergy had had to send in tables of births and deaths as far back as 1721; and though these figures have never before been used for statistical purposes, a great many of them are in existence, and the present writer has worked them up. It has, then, been found that for part of the country annual figures can be given, with a very small margin of insecurity, back to 1721, and that figures for the whole country can be made out, though only in lump sums, for the years 1721-35, while annual figures are available after that period. The general character of the new figures is not very unlike that of the official figures for the period after 1750, with the important exception that the excess of births in the years 1721-35, following upon the long wars of Charles XII., is much higher than later on.

The most remarkable results obtained from these early figures is, however, a surprisingly effective working of what Malthus called the "positive checks"—*i.e.*, a perpetual tendency of births to exceed the means of sustenance and the consequent rise in the death rate, followed by a new increase of population, when the ravages of sickness had thinned the ranks of the previous abundance of people. The birth rate was fairly constant, oscillating in ordinary years between 30 and 33 per thousand inhabitants, isolated years going as low as 25 (only in the incomplete figures), and as high as 36. But the death rate fluctuated wildly, falling at times as low as 20 (or even lower in the incomplete figures), and at other times rising as high as nearly 44. Consequently, excess of births over deaths could sometimes be as high as 13·6 per thousand of inhabitants, while in other years the excess of deaths over births was exactly as high, so that the difference was 27·2 per thousand. Take as an instance the period 1738-45. The first two years showed somewhat normal death rates of 30·5 and 30·6, giving an excess of births over deaths of 3·1 and 5·8, respectively. But in the following five years the death rate increased enormously, ending by 43·7 in 1743; and each of these years showed an excess of deaths over births, the last one of no less than 13·6 per thousand inhabitants. After that purging, the death rate fell down to 25 to 26, giving again an excess of births from 7·1 to 13·6. Truly, Nature audited her accounts with a red pencil, in Sweden as in most, if not all, countries, before the Industrial Revolution.[1]

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[1] The materials for the figures here given are in the archives of the Swedish Central Bureau of Statistics. They will of course be published in their entirety, though when and where is still undecided.