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COMBINES AND RATIONALISATION IN GERMANY

1924—1928

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By

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FOREWORD

THIS study was undertaken during my tenure of a research studentship at the London School of Economics and completed during my tenure of the Mary Somerville Research Fellowship at Somerville College, Oxford. My thanks are due to Professor D. H. Macgregor, Dr. Hugh Dalton and Mr. J. W. F. Rowe for their assistance and advice. I have also to thank Herr Präsident Lukas of the Reichswirtschaftsgericht, who gave me access to records of the cartel court and enabled me to attend its sittings, and Professor Dr. Hirsch of Berlin for information about the effects of the cartel decree. In collecting material I was enabled by the courtesy of the Verein deutscher Maschinenbauanstalten to use their special publications and records. To Professor Harms of Kiel I am very deeply indebted for permission to use the collections of cartel contracts and annual reports in the library of the Institut für Weltwirtschaft at Kiel, and for much valuable advice.

During many months' residence in Germany I naturally obtained much information, personally given, on small points, but have relied chiefly on the very full and detailed reports of the Ausschuss zur Untersuchung der Erzeugungs- und Absatzbedingungen der deutschen Wirtschaft, since they provide original sources for the study of the whole German economic system which render direct investigation unnecessary.

D. WARRINER.

September, 1930.

CHAPTER I

INDUSTRIAL AND FINANCIAL SETTING OF THE COMBINE MOVEMENT

BRITISH and German industry are not in general comparable. In the first place, discussion of British industrial affairs usually begins and ends with the relations of capital and labour, and in Germany that has never been a primary problem ; labour costs have never been so important as costs of capital and transport ; and in the second, British industry in general, and the staple trades, in particular rely more on the export markets than does the German ; the German branches which have to face the same catastrophic loss of markets as the British staple trades are the manufacturers of small finished goods, musical instruments, pottery, glass, not the heavy industries. These permanent and fundamental contrasts, explained by the obvious differences in the historical and geographical conditions of each country's economic development, were apparent long before the war, and have been greatly intensified by the events of the post-war period.

One likeness can however be observed in both countries— a rough line can be drawn between the prosperous and depressed industries, though the same industries do not lie on the same side of the line. In Britain depression prevails in the staple industries, while active progress is made by the new branches. In Germany the basic industries have displayed almost sensational resiliency, while the older finishing branches suffer from depression. The depression in both cases is likely to be permanent, or at least of long duration, as it is due to permanent changes, loss of markets, financial conditions, coupled with structural hindrances to recovery in the form of relative backwardness of producers' combinations in Great Britain and the special financial weakness of the German finishing branches. Beyond this

very broad generalisation comparison cannot go. Consequently, each group of industries, each industry, has its own problems of organisation and its own possibilities of solution, which rarely resemble those of the corresponding British industry or group.

Turning to the present organisation of individual branches, the most marked contrast is observable in the older industries. The undertakings of the German heavy industry are in general much larger* than the British, for purely technical reasons, apart altogether from the combination movement, and the German marketing syndicates, highly organised and including all producers in their areas, are much older than the British; the coal syndicate goes back to 1893, the steel cartels to the beginning of the century, while the British marketing schemes and the larger amalgamations date from 1926. In Great Britain independent mines and steel works still persist; in Germany the integrated concern had already become the rule before the war, and the independent mines finally disappeared in the inflation period. As a result of the joint pressure of technical requirements and financial exigencies the German heavy industry is concentrated in the hands of a few large firms, one of them a trust controlling 40 per cent. of the Ruhr's output. This contrast in structure and organisation is accompanied by—and is no doubt partly responsible for—an equally striking contrast in prosperity.

The contrast in prosperity does not extend to the textile branches; both the British and the German industries are suffering from depression to about the same extent, though for different causes. The German textile industries are less fortunately placed as regards their supply of raw material, and rely chiefly on the home market. Most branches are less technically efficient than the British, less highly specialised; establishments are smaller and less locally concentrated. Even under these discouraging conditions, cartel formation has gone further, except among the finishing branches, though without marked success.

In the newer branches, on the other hand, organisation and structure of the British and German industries are fairly

* cf. Appendix I (i).

similar. In chemicals, the two great trusts are identical in outward form, though their achievements are on very different levels. In engineering, several very large undertakings exist side by side with a number of smaller businesses; the German industry can however exhibit several triumphs of organisation carried out under the guidance of a magnificently organised trade association to which the British industry can offer no parallel. In both countries the electrical manufacturing and artificial silk branches are dominated by a few large concerns. In Germany these have expanded by absorption of smaller concerns, less than by addition to their own works, while in Great Britain smaller independent works have developed rapidly since 1926. In both countries the electrical industry is free of connection with other branches, since Siemens and the A.E.G. severed their connection with the heavy industry made in the inflation period. The British artificial silk industry is also for the most part free from such connections but in Germany important artificial silk undertakings have been financed by the chemical and coal concerns, though the dominant Glanzstoff Bemberg combine has developed by expansion and self-finance on the same lines as Courtaulds.

Long before the war, the services which the combines rendered were evident enough to raise the question why British industry did not avail itself more readily of the same instrument. In the effort to give due weight to the significance, magnitude and rapidity of the movement, explanations of its origin tend to become too fundamental, emphasising the influence of theory and national psychology rather than the industrial setting. Popular economic theory has been responsible for no material manifestation in this field, and national psychology, after all, explains only inertia and not activity. Two obvious causes, peculiar to Germany, lay at the root of the movement, the later development of German industry, and the technical conditions of production. Of the two perhaps the second is the more important; late development alone would not have forced the industry to combine if the proportion of fixed costs had been lower; it is the technical conditions of production which account for

the principle and structure of the heavy industry's organisation, if not for the structure's perfection and extreme developments.

Hence the movement in its early stages chiefly affected the heavy industries, whose peculiar position in the German industrial system requires special emphasis. The terms "heavy" and "finishing" as applied to groups of industries in Germany not only describe but also classify; the classification is so obvious and so often made in Germany that it is not often observed that industry elsewhere is not so easily carved at the joints—in France or Great Britain the distinction would throw no certain light on any aspect of the national economy; but in Germany the distinction is not futile, for it recognises dissimilarities in historical development and present economic interest, dissimilarities sometimes so great that they become contrasts. The terms correspond only very roughly to the division of products into means of production and consumers' goods, or into producers' and consumers' goods, but the fact that they do not quite exclude—the greater part of the chemical industry's output is "finished" for instance—and hardly define, is no reason for rejecting their use. They do indicate the salient features of the groups. Fixed costs are low in the finishing branches which employ skilled labour and buy their raw material; their critical cost is usually the short term credit rate. To the heavy industry which extracts, prepares, or makes its raw material and requires enormous capital investment, variable costs—with the exception of transport charges—are relatively unimportant. These characteristics are universally exhibited in any industrialised country, but the contrast is marked more clearly in Germany by reason of the geographical distribution of industry.

The peculiar transport situation arises because the industrialisation of Germany not only came later than that of Great Britain, but also came more disjointedly. Discoveries of the coking process, textile machinery, the steam engine, were indispensable, but not decisive. Even the railway was for a long time a political rather than an economic asset. Expansion did not begin till the Gilchrist-Thomas and

Siemens Martin processes were discovered, and these discoveries did not merely introduce new processes, but produced new industries; for until the middle of the century only the small iron ore deposits of the Erzgebirge and Harz were mined and nearly three-quarters of the iron output was smelted with charcoal. Yet Germany had been engaged for centuries in industries, skilled, various and renowned, as, for instance, high quality steel, linen and porcelain. So late as 1860 these were still her principal industrial products. The development of the coal, iron and steel industries in Rheinland-Westphalia forced the old industries to produce on a gradually increasing scale and steadily increasing rate, but not on such a scale or at such a rate as to necessitate fundamental changes which, so far as technique improvements were concerned, had already taken place in textiles and paper. At present the technical methods of the older group are not in general behind the best modern practice, but it bears two marks of its earlier origin, the survival of hand-work in certain branches, and its location. In England the complex of events known as the industrial revolution brought with it complete changes of location; the scattered sites were abandoned for regions with certain necessary and obvious qualifications. In Germany the old industries did not move, for they had what coal they needed, distance from their market did not trouble them, and skilled labour kept them where they were—in very few cases did they disappear, nor did old industrial centres near the Rhenish-Westphalian area (cutlery, silk and linen, for instance) appear to gain much from their proximity. Thus the difference in dates of origin accounts for the wide dispersion of industry as a whole in a nation with mineral deposits concentrated in small areas.*

Hence the transport situation is at once the strength and the weakness of the German heavy industry; the strength, because from it grew the three-fold unity, Ruhr coal,

* Only in Germany could Weber's industrial location theory justify its existence; elsewhere the sum would be worked with the answer on the same page, for an industry can usually only be where it is, but when heterogeneous factors—historical and economic—or traditional and rational—influence location on such a scale it is natural to try and estimate their relative strength.

Lorraine ore, Rhine chemicals ; the weakness, because the coal and iron industry's capacity is always greater than its market ; for this reason coal sold in the " non-contested area " must pay for coal sent to the contested areas, and steel sold in the inland market must bear the cost of exceeding quotas in the international cartel. To do the industries justice, they perpetually attempt to find other ways of escape—to secure concessions from the railways, or canal construction from the state, to keep their own shipping on the Rhine, to solve the problem once for all by a long-distance gas transmission scheme. The two greatest Ruhr firms have found an even better way of reducing transport costs—removal to the Rhine : the Steel Union has concentrated production in its Hamborn works and Krupp proposes to abandon the world-famous Essen works for a site on the Rhine. Since the war, the transport situation has been much affected by the emergence of Central Germany as an economic unit, based on development of the lignite seams and the electrical power system. The transport problem will no doubt disappear when the great activity in coal distillation and fuel economy experiment comes to fruition ; but, until the day comes when solid fuel is unknown, it will continue to be responsible for the standing phenomena of the German heavy industry—modernisation of plant verging on over-investment—a state of internal tension in the syndicates due to dumping prices in the competitive areas.

From the relative importance of overhead and transport costs arises the fundamental contrast in organisation between the heavy and finishing groups, only recognised in recent years. In the early years of this century it seemed quite likely that all industries would in time follow the example of those which had taken to the cartel in the 90's, just as there seemed no reason in the inflation period, when Stinnes and the A.E.G. were extending in all directions, why they should stop short of the finishing industries. Since stabilisation put an end to investment of that kind on that scale, it has been recognised that combined production of mass goods and quality goods contains something " sprunghaft, lückenhaft, ungleichmässig," and that this disparity which prevents

connections between industries of certain kinds extends to the form organisation has taken in the two main branches. Both the highly developed heavy industry syndicate regulating output and sales, and the loose agreement of a textile branch to make common terms with dealers, are market-controlling organisations, but for the one control is a necessity, for the other a convenience, because the heavy industry must secure regular employment of plant as the finishing branch need not. In addition, the markets are of different character. The heavy industry's markets are interconnected and interdependent, depending on general industrial conditions: those of the finishing industry are usually limited to a special, fairly constant demand. The difference is well illustrated by the obstacles encountered by international cartels in the finishing branches; agreements to divide up markets are not easily made because they do not work to order, and, further, the allotment of a market to a rival is a lost opportunity to the other parties to the agreement, as it is not, necessarily, under an agreement between national heavy industries.

But the post-war combination movement differed essentially from the pre-war movement in that it affected every industry. Its rapidity and universality were due to one cause and one cause only, the financial situation. The contrast in organisation extends only to marketing operations; financially both are similarly affected. Of course, in appearance, the heavy industry integrated concern with central management, and a nebulous financial complex in the textile branches, differ as much from each other as a coal syndicate and a ribbon makers' cartel, but in the case of the financial combine the purpose is the same. The cartels of the heavy and finishing industries resemble each other in function only; both undertake marketing operations, but in the heavy industry the cartel is a first necessity as it is not in the finishing branches. The combine in the heavy industry may perform a different function; it may use the financial amalgamation as a means for re-organising its works. Such re-organisation has usually accompanied amalgamation in the heavy industries—and

may accompany, but in fact rarely does—amalgamation in the finishing branches. But re-organisation is not, as it is often said to be, the motive for financial amalgamation; it is an accompaniment depending on the industry's structure. Fundamentally, financial conditions were the motive power of all combine formation in the post-war period.

If trustification has not progressed so rapidly in the finishing branches as in the heavy industry, it is because the financial structure of these branches does not often permit it, not because they offer smaller possibilities of rationalisation. A number of factors combine to render them financially more helpless. It is obvious that the firm in the manufacturing branches is financially weaker because as a financial unit the average firm is smaller* (although of course as an "establishment" it is in certain branches larger than the heavy industry firm in that it employs a greater number of workers in relation to the total number of works engaged in the industry), and therefore in some branches the private undertaking is typical and prevalent as it is not in any branch of the heavy industry. But the need for financial amalgamation is even greater in the finishing branches because the German credit system and financial conditions of recent years has put them in a specially disadvantageous position. The finishing industry firm is bound to be more

* Percentage of Share Capital in Large Undertakings.

	Reichsmark.			
	Under $\frac{1}{2}$ Million.	$\frac{1}{2}$ Mill. to 5 Million.	5-50 Million.	Over 50 Million.
Raw Material Group :	2	12	28	58
Coal	1	2	12	85
Coal and Iron	0.5	1	11	87.5
Iron and Metal	2.5	20	55.5	22
Finishing Group :	6	33	33	28
Machines	7	47	42	4
Electro-technical	2.5	10.5	29	28
Chemicals	2.5	12	17	68.5
Textiles	6	57	27	10

(See *Wirtschaft und Statistik*, No. 7, 1928.)

sensitive to changes in the short term credit rate because it employs a proportionally large amount of working capital. The inability of the manufacturing firm to accumulate large reserves and the necessity of paying high dividends renders it still more sensitive. Under normal conditions sensitiveness is not necessarily a drawback, but in the past few years the rate has fluctuated within narrow limits only and has remained higher than in Great Britain and the U.S.A. Abnormal financial conditions have affected the supply of long term credit equally seriously. During the inflation period all branches were obliged to obtain working capital by issuing share capital. These new issues were not accompanied in the finishing branches by investment in new plant, as in the heavy industries they usually were. The writing down of capital in the gold mark conversion balance sheets had to be considerably greater* and therefore these

	Nominal Capital, 1923, in % of 1913.	Gold Mark Capital, 1924-25, in % of 1913.
Mining companies ..	358	135.0
Chemical companies ..	1,310	189.5
Textile companies	1,360	124.5

branches began the stabilisation period with their credit position impaired. No improvement took place until the beginning of 1927. From April, 1924, until the end of 1925 the Reichsbank, as an alternative to raising the discount rate, pursued a policy of credit rationing, limiting its volume of discounts to the amount outstanding on the 7th April, and though it is believed to have re-distributed amounts among the different classes and groups, no information is given as to the principle on which the re-distributions were made. It is generally asserted that the amounts allotted to the finishing branches were unduly small, as might be expected in view of the inevitable approaching crisis. The

* Cf. official summary of share companies' balance sheets for the gold mark conversion balance sheets.

Reichsbank's credits at the 10 per cent. rate gave an enormous advantage to those who received them, at a time when market rates might be two or three times as high. At the same time, the finishing branches had no access to the foreign capital market as the heavy industry had; the Blumenstein textile concern's London loan is the only exception. By the end of 1925, stagnation had turned to depression and demand for credit was sufficiently reduced to permit return to control by the discount rate. The date of the beginning of revival cannot be exactly determined because the English coal strike intervened; by the spring of 1927 revival was turning into a boom, which continued until the discount rate was raised in the autumn. During this last period the position of the finishing industries improved, special factors besides the lower rate lightening the burden. Banks and credit institutes began to make special arrangements for medium-sized establishments* and the instalment purchase system spread.†

The root of the financial weakness of the smaller firms lies not only in these transitory conditions but in the German credit system itself. Since the banks undertake issue business and are the chief agencies for the supply of long period capital, they naturally favour older and larger firms. The problem has existed since German industrial expansion began (see Vögelstein, *Die finanzielle Organisation der kapitalistischen Industrie und die Monopolbildungen*, in *Grundriss für Sozialökonomik*, 1914, p. 398) and many projects have been made for its solution. Twenty years ago the creation of a special credit institution by the state was proposed by Dr. Tschierschky, but nothing materialised until 1928, when the Centralbank der deutschen Industrie

* Such as the \$10 Million 6 per cent. loan of the Deutsche Landesbank Zentrale, the union of state banking institutions, through Lee Higginson, Harriman and the New York Trust Co.; the Saxon State Institution's loan, the English textile machine loan; the Commerz und Privatbank's loan through the Chase National Bank. The Deutsche Bank's loan for "small and medium-sized industry" was not used for this purpose.

† Not only of the common type for motor-cars, furniture and machinery more widely introduced, but also in an unorthodox manner, by credit cheques issued by special finance companies at certain specified shops. Cf. Midland Bank report, March-April, 1928.

was founded—only, however, as a purely private undertaking—by the Great Banks for the purpose of supplying long-term credit to medium and small-sized industry against real property; it should fulfil a useful function, though its sphere of activity is restricted.

In the financial situation, then, lie the causes of the formation of the typical finishing industry organisations, the loose groups of interests described as concerns, and the condition cartel, shortening the terms of trade credit. The financial crisis in the heavy industry in 1925 only appeared more acute on account of the magnitude of the interests involved. It is true that there was in the finishing industry no development parallel to the dissolution of vertical combines and the re-grouping for horizontal re-organisation in the following year, but that was because the sensational change of organisation was only apparent; actually the vertical combines were not truly vertically integrated concerns, at all, and dissolved simply as a result of the Stinnes policy in the inflation period, while the formation of the Steel Trust resulted simply from the financial difficulties in which all the Ruhr concerns were more or less involved. Actually the same kind of re-grouping took place in both types of industry.

When contrasting the organisation of the two groups it must be remembered that they do not form two consolidated blocks of interests—the coal, iron and steel firms do form such a block, whose connections with chemicals are becoming closer, but lignite and potash mining are financially and technically independent; the electro-technical and artificial silk industry stand apart from the finishing group, resembling the heavy industry in their financial structure. In general the products of these branches are not necessary to each other (except in the case of machine construction, not a unifying factor because specialisation has gone so far); nor are the finishing branches financially interconnected, for “minor undertakings have more distinct groupings among themselves according to their several interests than larger business men. For having a smaller control of resources they are more likely to be specialised to one sphere and consequently to

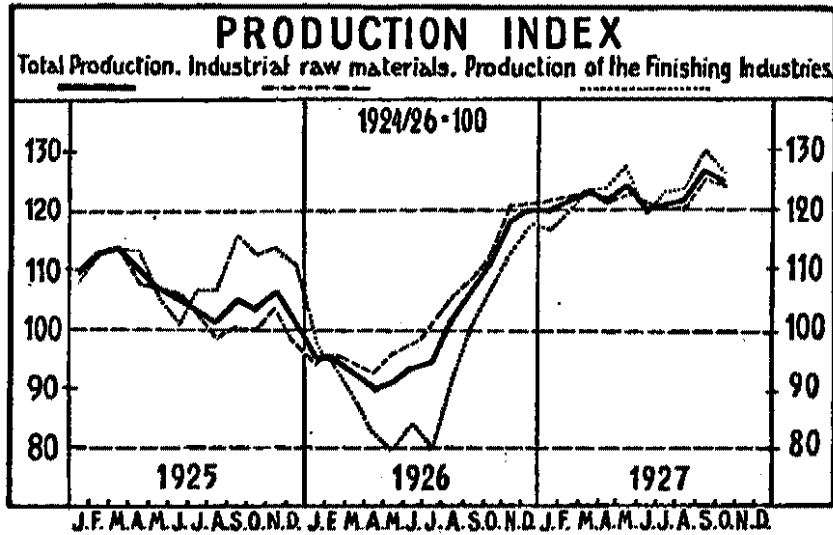
be dependent on an advantage possessed in one sphere alone."*

The distinction between "heavy" and "finishing" has been made merely in order to indicate difference in market organisation and the resemblances in financial organisation, not to contrast sharply the economic position of the two groups. In this respect it is only permissible to speak of a very rough line of cleavage between them. Textiles, leather, certain branches of machine construction are certainly depressed, but engineering as a whole, paper and some of the small speciality industries are doing fairly well, while artificial silk and electro-technical products have enjoyed sustained prosperity. If output is to be the test of prosperity, then the heavy industry is prosperous, but if financial results are to be the test, the coal and iron concerns do not make such a brilliant impression. The use made by Messrs. Quigley & Clark (*Republican Germany*, p. 165) of the Institut für Konjunkturforschung's index of production, to illustrate the difference in economic position of the two groups is not permissible, for although the classification of products does correspond to the distinction here made,† the curves are comparable only in direction and not in absolute height; the index with the 1913 base, as used by Messrs. Quigley & Clark, was abandoned by the Institut as misleading, and an index with the base 1924-26 adopted in its place which exhibits clearly the greater sensitiveness of the finishing branches.‡

* Dobb, *Capitalist Enterprise*.

† The raw materials output index includes coal, lignite, pig-iron, ingot steel, rolling mill products, potash, chalk and cement; the "finishing industries" output index, cotton, linen and hemp yarn, semi-finished paper goods, paper and pasteboard. The data are supplied by industrial associations and are not published.

‡ The index with the correct base is only available in the third volume, 1927, of the *Vierteljahrshefte zur Konjunkturforschung*, the classification "raw materials," "finished industry," having been abandoned for another, more schematic, but less useful, "production"—and "consumption-goods," presumably as a preliminary to theorising on the lines of Cassel and Spiethoff.



CHAPTER II

EXTENT OF MARKET CONTROL

IN spite of the immense volume of discussion of the significance and tendencies of combination, the extent of its power is a matter for dispute, because of course it is not a measurable phenomenon. Even if there were a cartel census no conclusion could be drawn from it—in one branch a weak price cartel temporarily includes all producers—in another a syndicate is struggling with outsiders—in another a trust controls 50 per cent. of total output—in another two large concerns are believed to work in agreement—how can the extent of combination be computed from such data? Commonly computation relapses into generalisation—"trusts and cartels in all the important branches, 'concerns' and cartels in most of the others." Still it ought to be possible to be a little more exact, if some single aspect is selected. The only unofficial investigation* of this kind selected the aspect of concern formation, meaning by concern any financially interconnected group of firms. Hence the conclusion that of the 20 Milliard Mark capital of all German share companies, 13¼ milliard is invested in concerns, only throws light on the extent of financial inter-connections which does not, of course, coincide with the extent of producers' control.

To estimate the extent of such control would be possible if there were adequate production statistics, for within each group it is possible to estimate the proportion of output disposed of under non-competitive conditions, and the total net output so controlled could be compared with the net output of industry. By "control" is not meant "monopoly"; that is, if 100 per cent. of the product of a group is described as "controlled" it does not follow that

* *Konzerne, Interessengemeinschaften und ähnliche Zusammenschlüsse im deutschen Reich, Ende 1926.* Berlin, Reimar Hobbing, 1927.

that group is able to fix prices at will, but only that prices are regulated by agreements between producers and/or by a trust which dominates the branch. The output of the branch is described as controlled if a cartel regulates prices or output, not if it merely fixes terms of delivery. This method is, however, hardly possible because there has never been a general census of production: the industrial census of 1925 deals only with numbers of establishments, persons employed, and power installed. The annual or biennial *Produktionserhebungen** are censuses of the physical volume (with valuations in some cases) of the gross output of certain important industries or branches of industry, accounting for about 12 Milliard RM. in total value. But they provide *net* output figures only for the textile branches, not for iron and steel, and in the case of textiles are so incomplete as to provide very little basis for calculation. Nor are private estimates very reliable for this purpose. The only two available vary considerably; that of Prof. Julius Hirsch which puts the net value of German industrial output for 1926 at 30 Milliard RM. is probably the more acceptable; but the subdivisions are too large to be used for this purpose. The Institut für Konjunkturforschung, on the basis of a national income of 50-55 Milliard RM. for the same year, puts total production at 54 Milliard RM. of which agriculture accounts for 10 Milliard, industry 26, trade and commerce 12, "services" 6. The gross output of industry is put at 30 Milliard RM., a figure which seems extremely low compared with the net output (as estimated by the British census of production). The Institut does not publish the basis of its calculations, but only uses them to weight its own production index number, and its grouping is so arbitrary as to be useless from the standpoint of organisation. It seems impossible, on the basis of more recent calculations made by the Institut† of the proportion of export to production, to put the gross output of German industry in 1926 at anything lower than 35 Milliard RM. In the following table the relative

* Last pre-war years 1907 and 1909: since war 1925 and 1926, in some branches also 1927 and 1928.

† (1) 1928. Heft. 3.

COMBINES IN GERMANY

share of this gross output contributed by each group is estimated on the basis of the official *Produktionserhebungen* or valuations supplied by the industry itself or by private persons, and, failing these, a valuation calculated on the basis of export values, in cases when the proportion of output exported is known. The grouping corresponds to the organisation of the branches, not to the census classification exactly. In cases when the competition of outsiders is so

Census group.	Industry. (1)	Gross output 1926, Milliard RM. (2)	Output controlled by cartel and/or trust. (3)	Source. (2)
III	Coal and by-products	3.0	3.0	Official output figures, export statistics.
III	Lignite	0.4	0.2	
III	Potash	0.2	0.2	
VVA	Iron and steel, iron ore	4.6	4.6	
VI	Iron and steel goods	1.2	0.6	I.f.K. estimate.
V	Non-ferrous metals ..	1.3	1.3	Official output and export.
VII	*Engineering	3.0	1.5	C.E.I. estimate.
VIII	*Electro-technical ..	2.0	1.6	
IX	†Chemicals	2.6	2.6	
X	‡Textiles	5.0	2.0	Official and Kertesz est.
XI	Paper and paper manufacturing ..	1.7	1.0	Assocn. Stats.
XIII	Rubber, celluloid, etc.	0.5	?	I.f. K. est.
XII	Leather	1.5	0.0	Official output.
IV, XV	Export group	1.1	0.6	Assocn. est.
IV	Building material ..	0.9	0.5	I.f.K. and Hirsch.
XVI	Food	2.7	1.3	
XIV	Timber	0.2	0.0	I.f.K. and Hirsch.
XVIII	Building	1.3	—	..
XIX	Public utilities ..	1.8	—	..
	Total	35.0	21.0	

* Including autos = 0.5.

† Including nitrates = 0.2.

‡ Including art. silk and linoleum.

severe as to negate cartel influence, output is considered to be uncontrolled, i.e. the position is identical with a competitive state. ("Output controlled" does not mean the amount of output actually regulated, but the proportion of total output disposed of under non-competitive conditions.*)

How much advance in market control has there been since the pre-war period? Of the groups in this classification, some achieved their present degree of control early in the century, though in these industries the existing organisations are on a much firmer footing than they were at any time in that period. The coal and steel syndicates in the post stabilisation period were obliged to re-fight old battles. Long before the war the coal trade had entirely lost its independence and acted merely as the subsidiary of the syndicate; but during the inflation period the more powerful concerns, Thyssen, Rheinstahl, Stumm, Arenberg and Klöckner, had used their own trading firms and ceased to sell through the syndicate organisation and therefore at syndicate terms. This arrangement naturally caused dissension within the syndicate and prolonged the negotiations for removal of the contract for eighteen months.†

A similar struggle in the steel markets is carried on between the independent trade and the concerns trading organisations which grew up in the inflation period. The independent trade is considered more efficient than the concerns organisations, which tend to appoint old employees with no experience of wholesale trade to their subsidiary companies, but is less capable of standing a long competitive struggle as its financial resources are weak compared with those of the concerns. The dispute reached its climax in

* See Appendix II.

† The "inland bloc," the mines which still sold through the syndicate organisation, wished the syndicate to control wholesale trade entirely, and to leave to the concerns trading companies the conduct of local trade at syndicate prices without syndicate rebates, while the powerful concerns favoured either Thyssen's proposal that the syndicate should sell to large consumers and the concerns trading companies to smaller, or a proposal that the syndicate alone should sell in the Dutch market. The arrangement finally made—that in the uncontested area the syndicate only should sell, but that both concerns trading companies and the syndicate should sell in the contested area—satisfied no one.

December, 1927, with the breakdown of the negotiations for the renewal of the previous contract* ; after a competitive struggle which in some districts lasted four months, an agreement with the trade was reached in April, 1928, on the basis of the old contract with very slight modifications, leaving the trade much weaker than before. Apart from such set-backs, the situation in the great industries, so far as extent of control is concerned, is essentially the same. Coal, Rhenish lignite and potash, most of the steel branches, the electro-technical and chemical industries had secured control of their markets before the war, though their associations were then more frequently threatened by the fear of dissolution. Other industries have made considerable progress. Either owing to the removal of special hindrance to combination, or under pressure of a contracting market, cartels have been formed in many branches hitherto unorganised.

Most striking of all has been the progress in certain iron and steel branches. In the pig iron and semi-finished steel the situation remains unchanged, in that the organisations still control the sale of all the product that comes on the market, but neither the Pig Iron Association nor the Rohstahlgemeinschaft retain their former importance, since the pure works have now almost all disappeared and the cartels act simply as accessory organisations. In appearance the Pig Iron Association is stronger, since it now includes

* The essence of the contract signed in 1926 and expiring in January, 1928, was the exclusive trading clause which bound the traders to purchase only from the Stahlwerksverband. The clause was condemned by the cartel court in a judgment given under §4 of the cartel decree in March, 1927, without effect, since at that time there was no possibility of foreign import, and was abandoned in August, 1927, when the free trade had an alternative in Belgian iron as a result of the high inland price of steel. (Belgium is not a member of the international cartel.) They therefore gave notice of rescission from the contract constituting the Verband Rheinisch Westfälische Eisengrosshändler, G.m.b.H. The independent traders (only two in the Rhenish Westphalian area itself but more numerous in North and Central Germany) formed an association to protect their interests and in the course of the negotiations in December demanded the same two per cent. rebate and the same guarantee of direct trade with the syndicates as the works traders had; the request was refused but the independent trade, secure in its belief in the efficacy of the import of Belgian iron, would make no other terms. At the same time, the Stahlwerksverband played into their hands by raising prices. The trade found that the amount of Belgian iron at its disposal was smaller than it had anticipated, and had to give in.

the "coast works" (now the property of the Steel Union and other Western concerns) which caused its dissolution in 1908. From the beginning of the war it continued a formal existence, unlike the other steel cartels, which dissolved altogether and did not re-form until after stabilisation of the currency and re-introduction of the iron duty in January, 1925. Though the 1923 contract was the first to regulate self-consumption, the new clause did not represent a real advance: most of the large consumers had by that time acquired blast furnaces. At present, only 20 per cent. of the industry's total output comes on the market. The Rohstahlgemeinschaft is an even more formal organisation, which fixes quotas for ingot steel production, but leaves the regulation of prices, terms and sales to the branch associations: the real successor of the pre-war Stahlwerksverband is the A Products Association which controls prices and sales of semi-finished steel, railway structural material and form iron.

The one wholly new development appears in the regulation of raw material supply, a problem raised by the loss of the Lorraine orefield. In 1917, for the first time, the output of steel produced on the Siemens Martin process exceeded the Thomas steel output and has steadily increased since.* This has permitted greater reliance on scrap: at present, half the total iron content of the raw material required by the iron and steel industry (for an annual output of 12 million tons of ingot steel) takes the form of scrap, one-third of foreign ore and one-sixth of German ore. For the time there is no real shortage of scrap on account of the export prohibition, and the fact that the steel industry is not working to capacity, but if the export prohibition were removed, and the industry occupied to, say, 90 per cent. of its capacity, a scrap shortage might easily ensue. The possibility of shortage is regarded so seriously by the industry that it has been trying in the past few years to get the scrap market under its control by ousting the scrap trade and setting up its own purchasing organisation, with the object not only of guarding against a possible shortage but also of stabilising the market. Since the war, scrap

* See Appendix I (ii).

prices have been subject to violent fluctuations,* nowhere more violent than in Germany.

The market can only be stabilised by forecast of demand by the steel works themselves ; central purchase is a useful accompaniment, but for such an organisation to be effective it is necessary that it should include all purchasers and deal direct with the scrap depôts. Two organisations exist which are attempting to do this, one for the West, one for the East. Before the war there had been no Western organisation because the Thomas works refused to take any step which would injure their own position as sellers of scrap or benefit their competitors, the Siemens Martin works, by causing them a cheaper supply ; now that the mixed works prevail, opposition has ceased and by 1925 five great firms in Rhineland-Westphalia had their own purchase organisations, three of which united when the steel trust was formed and paved the way for the inclusive association, the Dortmund Schrotteinkaufsgesellschaft, formed in mid 1926, controlling about 70 per cent. of the Western demand. This association did not itself purchase scrap, but estimated beforehand its members' demand, which it covers from the works firms (i.e., the concerns' subsidiaries) and the free traders. In this way it stimulated competition between the two sets of traders to secure its orders, since it did not fix prices ; during 1927 the struggle was carried on with such violence that its stabilising influence was completely counteracted.

* This sensitiveness is partly due to the fact that many small traders deal in scrap in times of industrial revival only, but principally to the adjustment of processes in a vertically integrated concern. The peculiarity of the demand for scrap was explained by Direktor Wenzel to the Enquête Ausschuss as follows (though the relations are actually more complex : see Vanderblue and Crum, *Iron Industry in Prosperity and Depression*, Chapter XIII) ; the United Steel Works produce about 600,000 tons of steel per month, of which 300,000 are produced on the Thomas process, 300,000 on the Siemens Martin, which requires 200,000 tons of scrap. The trusts' rolling mills in producing this 600,000 tons of steel produce about 120,000 tons of scrap, so 80,000 must be purchased in the market. If steel output is reduced to, say, 450,000 tons per month, the amount of steel produced on the Thomas process is not reduced at all because the furnaces must be kept in blast so that the Siemens Martin must bear the whole reduction ; 100,000 tons of scrap are then needed, 90,000 can be supplied by the rolling mills ; thus, if steel output is reduced by one quarter, the demand for scrap in the market is reduced by $\frac{1}{4}$. See Appendix I (ii).

After a vain threat on the part of the trade to institute proceedings before the cartel court, which the works firms ignored, an agreement was reached in April, 1928, setting up a purchasing organisation to allot orders to the trade, leaving the works firms with a quota of 56.4 per cent., so that the trade is considerably weakened. With the eastern association* (also controlled by the Steel Union) it has arranged a boundary line; together with a Dortmund cast iron scrap organisation and a smaller purchasing association in Berlin, the two control 90 per cent. of the total scrap supply. Thus the conditions for stabilising demand are now in existence. The degree of stability so far achieved does not perhaps compensate for the injury to the free trade arising, not from the organisation of purchase—in itself excellent—but from the favoured position of the works trade firms.

The disappearance of the conflict of interests between the pure and the mixed works has also permitted advance in the organisation of the finishing branches. At present all rolling mills products are syndicated with the exception of fine and medium plate, a branch in which large producers refused to combine for fear of protecting the numerous small firms that persist in the Siegerland. In the years 1904-1913 between 37 per cent. and 34 per cent. of the total rolling mill products output was subject to the control of syndicates; in April, 1925, only 7 per cent.; in July, 1926, 89 per cent.†

* The eastern organisation (Deutsche Schrottvereinigung) dates back to 1903, for Thomas steel was never produced in Central Germany or Silesia; it differs essentially from the western organisation in that the works themselves fix prices through their trading firms. Their attempt to exterminate the trade has succeeded to such an extent that they can reduce prices to any level they desire, short of checking the supply.

† The great increase of syndicate control is due principally to the existence of the bar iron and tube associations. In the case of bar iron syndication has been hindered by a technical factor complicating the usual pure σ . mixed works struggle. The fine steel producers used chiefly the Siemens Martin process and usually owned steel works and rolling mills, but not blast furnaces, because their consumption of pig iron was not large enough to justify producing it for themselves. They had to buy their pig iron in the open market from the Thomas works whose finished steel competed with theirs, using their own pig iron; therefore they could survive the competition of the Thomas works only if they concentrated on production of fine steel. But they were not able to concentrate solely on the production of fine steel, and continued to make bar iron which should have been included in the heavy class, described by the Stahlwerksverband as A-Products.

No such degree of control had been achieved since the end of the 80's when the strong and tyrannous German rolling mill association had flourished ; its existence ceased to be possible when pure works ceased to be the rule and it broke up in 1893. When the pure works had become the exception, its existence was possible in another form.

The paper industry also exhibits considerable advance, in controlling the marketing both of its raw material and of the finished product. In the raw material branches organisation has only recently made much progress. Up to 1928 the rag trade was unorganised ; at the beginning of the year three local purchasing organisations were formed, including all the larger purchasing firms, which will probably amalgamate in the course of time, since the immediate effect of their formation was to intensify competition—two of them having been formed as a defence against the first. In the wood pulp branch, only the South German producers had formed a selling association in the years before the war ; now all German producers are members of a price and terms fixing association which will probably develop in time into an output regulating cartel like the Scandinavian syndicate. The cellulose branch succeeded early in 1928 in setting up a central sales organisation regulating output and prices, having been previously hindered from taking this step by the prevalence of the connection between cellulose and paper manufacture ; with the development of an independent

In this branch it was impossible to achieve a division of labour between pure works and mixed works (that is, roughly speaking, Siemens Martin and Thomas works). The Siemens Martin bar iron producers formed organisations among themselves in 1901, 1909 and in 1913 which never lasted long, so severe was competition with the Thomas works. The effect of the absence of syndication before the war is shown by a comparison with English prices : from 1900-1913 the price of German bar iron remained considerably below that of English steel bars, while German foundry pig iron III remained considerably above the price of Cleveland III.

In the tubes branch a cartel was formed in December, 1924 ; its principal members, with the exception of Mannesmann, of whose capital Thyssen owns ten per cent., are amalgamated in the United Steel Works, and it is permissible to speak of a trust monopoly in this branch. In 1927 the Rohrenverband bought up the Stahlwerke Niederrhein, a new undertaking which was to begin producing tubes early in 1928 on a patent process, expressly with the intention of upsetting the cartel—a sensational transaction, since it suggested that the cartel feared its competition.

market, the artificial silk industry, the four large firms which control three-quarters of the industry's output were driven to take measures against the competition of the Scandinavian and Czech industries.

For its finished product the industry has two markets, industry in general, and the consumer of fine paper and wall-paper. Of its total output, half is coarse printing paper, one-quarter packing paper and the rest paper of special qualities; that is, about three-quarters is sensitive to industrial fluctuations, about one-quarter to more lasting changes in consumers' income. The industrial market was controlled before the war by the newspaper syndicate, a powerful inclusive organisation on the same lines as the heavy industry cartels, relying on a high protective duty, allotting quotas, selling through a central office, and maintaining a lower level of prices for export. The cardboard branch, on the contrary, has not succeeded in achieving any degree of control; in spite of the formal existence of price associations, the branch works under genuinely competitive conditions.

Before the war the fine paper market was sufficiently steady to dispense with organisation, but in recent years fluctuations in consumers' purchasing power have necessitated price control. Conventions now exist in every branch, in number about forty. Some progress is also noticeable in the wall-paper branch. Pre-war associations never lasted long, because as soon as the manufacturers of the higher grades had succeeded in fixing prices the manufacturers of lower grades began to make higher quality papers. The Verband deutscher Tapetenfabrikanten, formed in 1912, with thirty-one members against twenty-four outsiders, still continues, carrying on an intermittent struggle with the outsiders who have now formed a rival association.

In the textile industries organisation remains weak. The industry has never been a strong suit, for in the days of Germany's industrial expansion there were no docile tropical markets of any size, and demand in the home market increased only slowly, owing to the low purchasing power of the working-classes and the absence of taste and fashion in

the middle-class. Since the war, only those misfortunes common to all German industries have overtaken it, though certain branches—most of all linen—have had to contend with special difficulties. The industry as a whole has not been so hard hit by the loss of Asiatic markets as the British has, since it exports less than 80 per cent. of its total output. But its inherent weakness gave it less power of resistance than other German industries; in the years following stabilisation, when it was crippled by shortage of working capital, other European countries poured their products into the German market as a substitute for the loss of Russian and other markets outside Europe; the passivity of the textile trade balance was three times as great in 1925 and 1927 as in 1913. Organisation could not have prevented this altogether; but common purchasing arrangements, shorter credits to the trade, and price control could have given the industry a surer footing in the home market.

No progress can be detected in the speciality branches which rely chiefly on the export market. Velvet and plush, weaving, Oberlausitz cotton waste, hosiery, gloves, "Barmen" goods, Vögtland embroidery, in spite of a high degree of local concentration, have not, with the exception of the prosperous velvet branch, controlled by an amalgamation of the larger firms, been able to use any form of the combine as a remedy for their lost markets.

The branches relying on the protected home market should find combination relatively easy, were they not hindered by their wide local dispersion. This, with the additional complication that the connection of spinning and weaving is usual in some districts and not in others, renders national control almost an impossibility when raw material prices are fluctuating severely, except for the smaller branches manufacturing standardised goods.

Cotton has never succeeded in forming a national price cartel. The only general advance of the post-war period has been the establishment of a standard sales contract for yarn by the spinners' national association. In character the three main areas differ considerably from each other. In

the Lower Rhine and Dutch frontier area, spinning and weaving are usually carried on in separate establishments; before the war spinners did succeed from time to time in fixing yarn prices, but so far as can be ascertained, they have not done so since. In Central Germany, the connection of weaving and spinning varies from town to town; no price associations exist. But in the third main area, Southern Germany, weavers succeeded in forming an effective price association in 1926.

The woollen and worsted industries are more widely distributed even than cotton, spreading all over Central Germany, appearing in the Rhineland and the Palatinate, occurring in isolated centres in Brandenburg, Lusatia and Silesia. Neither industry appears to be achieving a higher degree of local concentration. The worsted branch, more specialised than in other European countries,* is well organised, though the worsted spinners' and combers' association, a strong inclusive organisation, fixes terms but not prices. The eight large commission combers have maintained a price convention since the 80's, but are not in a position to dictate their prices, because at least half the total annual output of yarn is combed by the spinners. The independent spinners in the woollen industry (though not important, since roughly three-quarters of the industry's total output is woven and spun by the same establishment), have succeeded in forming price associations because they are locally concentrated.† No weavers' association has much influence in either branch, with the exception of the Cloth-Makers' Convention: its terms have been the cause of long and bitter controversy with the trade, which has tried in vain to institute proceedings before the cartel court.

The principal advance in cartel organisation appears in linen spinning. Only 20 per cent. of the industry's output is woven and spun in the same establishment. The industry has suffered more severely than any other textile branch from

* According to the 1925 production census, only seven per cent. of the total annual production of worsted yarn is woven by the same firm.

† One in Forst, one in Cottbus, one in Reichenbach.

shortage of raw material and contraction of the market.* Like most industries facing catastrophic losses, it postponed all attempts at combination in the hope of an improvement of its position. By 1926 the permanence of the depression became evident and a syndicate was formed, covering about 90 per cent. of the industry's production capacity. The weavers responded by setting up a committee to safeguard their interests; otherwise, apart from one or two condition cartels, they are unorganised.

The silk branch has not made any noticeable advances. The weavers' branch (there are no independent spinners) was already well organised before the war in four "condition" cartels; one which fixed prices has now ceased to do so.

The German textile industries, as already suggested, do not usually encounter the problem of high conversion costs due to combination of the subsidiary processes, although cartels of dyers and finishers exist. Condition and price cartels in these branches, although in appearance similar, fulfil a different function and have a different origin from those of the manufacturing branches. Costs are more easily calculable, and less variable, since wages are their chief constituent; regularity of employment is the chief problem, since they cannot work for stock; thus cartel organisation is both easier and more necessary. Local cartels among firms working on commission or on own account are numerous, † frequently long established and strong enough to enforce a price scale (in one case, the silk dyers, ‡ strong enough to make an international agreement) though they have not attained anything like the strength of

* Output of Linen Yarn :

		Yarn Mill. Kg.	Thread Mill. Kg.	Yarn and Thread Mill. RM.
1925	..	20.4	2.1	92
1926	..	12.68	1.5	54

The last pre-war census was taken in 1909; compared with the results of that year the 1925 figure shows a decline of 36 per cent., the 1926 figure of 61 per cent.

† Between thirty and forty are known.

‡ At the beginning of 1928 this association had seventy-two members.

the English associations owing to their local dispersion and the smaller size of the average firm. Most of these cartel contracts contain a clause granting a rebate—usually as much as 10 per cent. for exclusive dealing, a practice which gives rise to much public discussion and protest from their consumers, but which the cartel court has declared justifiable economically in order to secure continuity of employment.* The branches which manufacture a uniform product for the industrial market—jute, hemp and linoleum—present a strong contrast to the weak organisation of the other textile branches. In each of these industries price cartels existed before the war, and have now become selling syndicates regulating output. Financial amalgamations now control a large share of the total output of each branch. The Blumenstein concern controls half the quotas of the jute syndicate, an exceptionally powerful cartel, which succeeded in enforcing a 50 per cent. restriction of output throughout 1926 and the first half of 1927. Similarly the two principal hemp manufacturers, commonly called after the towns in which they are situated, Füssen and Immenstadt (in the neighbourhood of Lake Constance) are now connected and control three-quarters of the hemp syndicate's output, while the remaining quarter is controlled by Blumenstein. In linoleum, trustification has gone far enough to supersede the cartel (though it continues a formal existence). The Deutsche Linoleumwerke, formed by the amalgamation in 1926 of seven large firms, some of which were already connected, is the only trust in the finishing industry which possesses monopolistic power, based on its inclusiveness and secured by international agreement and financial inter-connection. It has undoubtedly rationalised its works, and its financial position results have been exceptionally good ; it is, however, not altogether free from the suspicion of having exploited its position, and in consequence public authorities import their linoleum, in order to avoid the appearance of favouring monopoly.

* A memorandum for the Enquête committee investigating this question concluded that though extortionate policies might be pursued, the ease with which outsiders can arise in what must remain a small unit industry is a sufficient deterrent.

To review the whole field of cartel activity in order to estimate the degree of control which each branch has succeeded in attaining would be a fruitless task, even if adequate information existed for an accurate survey, since the minor cartels are perpetually dissolving and re-forming. Within the two groups described as heavy and finishing it is possible to estimate the extent of control in the larger branches, as it is not in the group of industries excluded from that classification, that is, those in which wages are the principal cost—food, clothing, building and contracting, timber. These unwieldy trades would deserve far more consideration in a survey of German industry as a whole than they can be given in a discussion of the problem of industrial organisation, since they employ about $5\frac{1}{2}$ million of the $12\frac{1}{2}$ million operatives and salaried staff employed in German industry. But with one or two exceptions the power of combines in these branches is probably negligible. The facts on which the estimates for these and other industries are based are summarised in Appendix II.

CHAPTER III

THE EXTENT OF RATIONALISATION

(i) ITS MEANING

The organisation of British industry has in the past few years come to resemble the German more closely than it did before the war, as a result of developments natural to their structure, so far as the new industries are concerned, in the older industries, through the more self-conscious process, rationalisation. The term, used loosely to describe any sort of concerted industrial policy, attained the same kind of popularity in the German press of 1926 and the British press a year or two later, as "reconstruction" and "Planwirtschaft" did in the years after the war, and served conveniently to revive discussion of industrial adjustment which had died down when the earlier catchwords expired. The word, in spite of its popularity, is capable of being used with an exact meaning. It connects the processes of works re-organisation and scientific management usually associated with the name of Taylor, the processes of standardisation and specialisation associated with the name of Ford, with the industrial combination movement in both its aspects of financial amalgamation and price control. The novelty consists in the combination of the two ideas—re-grouping as a preliminary to re-organisation; that is, it excludes on the one hand specialisation or standardisation carried out by the individual firm, and cartel and trust formation alone on the other. It combines the ideas of "Planwirtschaft"—organisation of industry as a type of government—and of "re-construction"—re-adjustment to new conditions, with certain differences. "Planwirtschaft" conceived of industry as governed by *ad hoc* machinery set up on *a priori* principles, while "rationalisation" implies

that the method is chosen by the industry itself; "re-construction" contemplated re-equipment rather than re-adjustment, but rationalisation involves a change down, an attempt to deal with worsened general conditions. Owing to this idea of the change down, it is not, as is sometimes supposed, an ideal of the most economic working; the adjustment contemplated is not merely the normal perpetual adjustment of cost reduction in response to falling prices and increasing output—that is, the economic activity itself, but the adjustment to a fundamental change, a "Strukturwandlung." Hence the policy is usually advocated only as applying to the older industries; the most enthusiastic advocates of trustification as a universal remedy are prepared to allow a few wild oats in the way of competition to the new industries, expecting rationalised conduct only of the elderly and depressed. Illogical as this restriction of meaning seems, it is entirely sound, for it recognises the vital question implied in this use of the word: the question whether large scale capitalist industry has the power of getting out from under the blow of permanent depression due to a contracting market or whether it must undergo the same operation as agriculture and domestic industry did, with no means of escape. If industry has already proved itself capable of such heroic re-adjustment in the past, rationalisation as a future policy for industry would carry much conviction. But if rationalisation means, as it must mean, planned re-organisation of an entire industry, no European industry, with perhaps one exception, has rationalised. The facts that the years 1924-28 showed record numbers of cartel formations and fusions, and that many concerns were standardising and specialising, do not prove that rationalisation was in progress. The suggestion of superhuman foresight and collective daring underlying assertions such as the following is misleading: "In Germany, rationalisation is not a subject to be argued about as a subject for economic dialectics. Under the stress of almost catastrophic crisis it was planned as a practical policy to be applied with immense energy. . . . This full programme of re-construction was first carried out in the heavy industries of Germany, but has been adapted to

the varying conditions of many of industries."* Actually all kinds of schemes for financial amalgamation, central selling, output regulation, market control were taken up as the exigencies of the moment seemed to require—for the character of the crisis changed at least three times—and not as steps in a comprehensive plan for re-adjustment. To regard the condition of German industry in 1927-28 as proof of the value of the policy is equally false. The re-equipment of the heavy industry, which undoubtedly placed it in a favourable position when revival came, was carried out in the inflation period, and revival came simply and solely as a result of the British strike, followed by the influx of foreign capital after the Dawes agreement.

The contrast is not between the unenlightened drifting of British industry and rationalisation, in Germany but rather between haphazard and piecemeal re-adjustments repeatedly postponed, and finally forced by unforeseen sustained depression, and a well-advertised speeding up of tendencies working from the first days of German industrial expansion. These various tendencies, investment in the concern, market control, financial amalgamation, were each in turn intensified by financial conditions. First inflation gave the impetus to invest in industrial plant, and from this "Flucht in der Sachwerte" rose the excrescences called concerns, ramifying at first in the heavy industry, then rapidly in every branch. These concerns had no central management, and no common interest, were merely collections of holdings made by the financially stronger firms. At the same time inflation both stimulated re-equipment of the heavy industry as an investment in real values and provided the means of carrying it out. In consequence stabilisation revealed great excess of productive capacity, urgently necessitating concerted market policy as insurance of the productive apparatus; the pre-war cartels were re-formed during 1924 and 1925, but were not subjected to the strain

* Meakin, *The New Industrial Revolution*, 1928. Also Balfour Committee Final Report, Minority Memo., p. 309: "As worked out in relation to the coal, iron and steel, chemical and power industries of Germany, this implies the reorganisation of industries, as industries, on a coherent and co-operative plan."

anticipated till the crisis, deferred by the Reichsbank's credit policy, came in June, 1925. The crisis when it came wiped out, broke up, and re-shuffled the inflation concerns, but the concern type remained the prevalent type of industrial organisation, by reason of its utility as an economiser of working capital, until the spring of 1926. As soon as the discount rate was lowered and issues could be made in the home market, the genuine post-war combination movement began—horizontal amalgamation as a means of long-term borrowing. The composite organisation of German industry is wholly due to this series of re-actions to abnormal circumstances. Finance is the one unifying and underlying factor of the whole post-war movement, in which no unity of direction, only unity of origin, is discernible. It is not denied that the combinations of 1926 carried out measures of re-organisation, only that these were not planned primarily in response to industrial conditions, as they should have been to deserve the name rationalisation.

Whether rationalisation as a future policy for industry carries any conviction must therefore depend, not on its achievement in the past, but on the extent to which trust and cartel formation has been accompanied by cost-reducing re-adjustment to industrial conditions, as distinct from financial, omitting altogether the question as to how far this was the motive. Generalisation as to the extent of this rationalisation *de facto* is difficult, but it can be asserted that of seventy to eighty amalgamations made in the years 1924-28 (excluding banks and insurance companies) involving over one million R.M. capital, at least half were accompanied by some re-organisation, usually not amounting to much more than re-organisation of clerical staff and sales departments, but in some, and these chiefly the largest, by comprehensive schemes for closing down, specialisation and concentration of the works. The real nature of these achievements only appears in the particular industrial setting.

(ii) RESULTS UP TO 1928

Contrary to general belief, it is in the sphere of the heavy industry that rationalisation in the proper sense has made

least progress. It is hard to see any reason before the war why the combination movement in the German heavy industries should not proceed to the farthest limit, nothing to prevent the whole great Ruhr and Lorraine complex from merging itself under a central control, possessing "monarchic authority almost as unchallenged as that of a sole railway system in an inland district of a great continent."* Actually it has stopped short of complete concentration; the combination movement is, for the present, at a standstill. This cessation precludes any far-reaching schemes for rationalisation.

How far the coal industry is unrationalised remains a matter for dispute. So far as the Ruhr coalfield is concerned, the Schmalenbach report, taken at its face value, suggested that the industry has been working on a non-economic basis. According to the majority report, the Ruhr mines in 1927 were working at a loss of 27 pfg. per ton of marketable output (i.e. coal and coke) a total loss equivalent to one-fifth the British loss (as estimated by the Coal Commission report) on half the British output. There has been no general or comprehensive closing down scheme; mines closed down in the post-war period, up to 1925, were all exhausted mines on the southern border of the coal field. Since then, concerns have closed down mines on the pretext of rationalisation, but it seems clear that in some cases the process has been uneconomic; the Phönix concern, for instance, has closed down three quite modern installations.†

So long as the industry does not face the necessity of a general closing down scheme, it has to relieve existing pressure on the market by maintaining a lower price level in the contested area and carrying the losses on prices in the monopolised area, a system which causes much dissension among the syndicates' members. Though the system is recognised as undesirable in the interests of the industry itself, there is no alternative. The differential level could be abandoned, if the resulting increase in consumption in the uncontested area were great enough to compensate for the decline in the contested area, an unlikely consequence

* Marshall, *Industry and Trade*. † See Appendix III (i).

in the present state of the international market. If it maintains the differential level, as it must until international agreements are reached, rationalisation would involve re-arranging the system, abolishing the tonnage levy, and compensating the mines which by reason of their favourable transport position and greater efficiency are best fitted to deliver in the contested area for losses there incurred, by giving them higher quotas in the uncontested area, at the expense of the less efficient mines. Even if that were possible, the policy would be much too strenuous for the industry itself to carry out, as internal friction would be immediately intensified by demand for compensation from the inefficient mines. In some cases in which the same concern owns both superior and inferior mines, an addition to the quota of the efficient mines might be regarded as sufficient compensation for the reduction from the inferior mines quota, but such cases would be rare; the real root of the market problem, the existence of inefficient mines and excessive output, could only be dealt with if all the mines were brought under the same financial control. Complete trustification, in other words, is the industry's only way of escape, but is not possible, since the mines are the property of the iron and steel concerns, which for many years to come will oppose further financial combination. No remedy can be found by the industry itself: all that remains is interference by the state, either through existing machinery or by means of special legislation.

Lignite mining, an industry which first became important in the post-war period (also syndicated under the coal industry law) offers a further proof of the absence of rationalisation. The Rhineland syndicate can certainly offer a brilliant proof of the value of organisation, but nothing could be more misleading than to regard it as a typical cartel. Though it has undoubtedly contributed to the healthy development of the industry, securing steady expansion, it has never encountered the real test—contraction of the market. In the East Elbe and Central German districts, cartel organisation plays a subordinate part, but is responsible for a pernicious and cumbrous marketing system. The compulsory syndicate law is responsible for

the existence of two selling organisations where one would do, the dominance of wholesale trade interests for an arrangement by which coal sold in the market must pass through the hands of two sets of traders instead of one.*

The cement industry, whose problem is described in Chapter V, is far from rationalised ; it maintains an enormous excess of productive capacity, with the aid of price-cutting in competitive areas and discriminating rebates.

As in coal, so in iron and steel, the mere size of concerns and the array of syndicates tend to conceal the existence of problems which organisation has not succeeded in solving, for which it is even partially responsible. But here the central problem arises, not from the difficulty of marketing a product with a contracting market, but from pressure on the market from excessive productive capacity due to the stimulus given by the security of the market to investment in the industry. The post-war re-adjustment—a much more simple affair than is commonly supposed—reduces itself to two processes of adjustment, one to the loss of raw material basis, the other to the results of currency inflation, processes which must be shortly described, since they were indispensable preliminaries to the formation of the Steel Union, often regarded as the culmination of rationalisation.

Before the war, Lorraine and Luxemburg supplied the Ruhr blast furnaces with ore and in their own blast furnaces made pig iron for the Ruhr rolling mills ; in return, the Ruhr sent coal and coke to Lorraine and Luxemburg. The exchange of products was not for the most part an exchange between independent firms ; the larger Ruhr mines owned Lorraine ore mines and blast furnaces, which used their coal and sent them ore or pig iron for finishing. Each area was so necessary to the other that both should be considered parts of one economic district—the heavy industry of the continent.

This *integration à distance* was destroyed by the treaty ; firms which had property in the lost territories received compensation from the Reich which they utilised in different ways. The Gelsenkirchen A.G. (Kirdorf) lost its

* See Appendix III (ii).

ore mines and blast furnaces ; its Aachen " Rote Erde " and Schalker Gruben und Hütten Verein were sold to the Schneider-de-Wendel group, leaving only its coal mines in the Ruhr. The Deutsch-Luxemburg A.G. (Stinnes) lost its iron works at Differdingen, leaving it—in addition to its coal mines—its large iron and steel works in the Ruhr ; but its mines could not supply all the coal which the steel works consumed. The two great concerns, finding their needs complementary, founded a holding company, the Rhein-Elbe-Union, in July, 1919, and the Gelsenkirchen firm agreed to supply the Deutsch-Luxemburg works with coal. In the following year Stinnes purchased the shares of the Bochum Verein (an old excellent coal and iron ore mining undertaking) which had become an opportunity for speculation owing to the machinations of Hugo Herzfeld's bank. In December, 1920, the holding company made an agreement with the electrical concern Siemens-Schuckert, and raised its capital. The nature of this " Interessengemeinschaft " was never explained ; the ease with which it was abandoned in 1926 suggests that the Siemens Schuckert connection never played an integral part in the concern. The affair, however, made a grandiose and dominant impression by its claim to control every stage of production from coal and ore to the finished product. There is no evidence that it ever achieved any sort of vertical integration other than provision of coal for all its members by the Gelsenkirchen, Stinnes and Bochum mines. It appears to have had no unitary management ; its members remained financially independent but were connected by the holding company, by interchange of shares and directors, by delivery contracts and profit-sharing agreements. From it Stinnes acquired the power and control of capital to erect the Stinnes private concern, whose awe-inspiring ramifications turned out to be so transitory.

The other great firm which lost Lorraine works, Thyssen, used the compensation received to expand, and brought the Hamborn works to their present state of perfection. Unlike the Lorraine works of Stinnes and Kirdorf, the works at Hagendingen formed a separate entity (their fuel came from the North French coal field) and their loss did not disturb

the organisation of the works in the Ruhr. Thyssen prided himself on understanding the concept of a balanced plant and may have thought that *integration à distance* was incompatible with it : or the construction of the Hagendingen works may have been a lapse from his usual policy, since he undertook it in 1910 when he was convinced that his plans for a great German trust based on co-operation between himself, Kirdorf and Stinnes would come to nothing ; whatever the motive may have been, the consequence of the Lorraine works' isolation was most fortunate.

Other works which received compensation for their losses had no previous interests in the Rhenish-Westphalian area. The Stumm concern's works were all situated in the Saar, Lorraine and Luxemburg, with the exception of the Minister Achenbach mine; and in their place it acquired in a haphazard manner a number of large and small works, among them the " coast works " the Norddeutschen Hütte in Bremen, and the Eisenwerk Kraft in Berlin, the Gelsenkirchener Gussstahl-und-Eisenwerke. Like the other Saar works, Röchling, Rombach and the Dillinger Hüttenwerk, which acquired Rhenish Westphalian interests, Stumm suffered in the 1925 crisis. The Lorraine firm, Klöckner, acquired the Georg Marien Bergwerksverein and the Hasper iron works and formed a sound concern.

For the formation of the major and permanent connections loss of territory was responsible ; the coal shortage of 1919-23 was responsible for others, some of them only temporary. Almost all large coal consumers, in the electrical and chemical industries as well as iron and steel, were anxious to purchase mines, without regard to cost of working or quality of coal ; in these combinations, therefore, the initiative was taken by the iron and steel (or chemical or electrical) works. Few of these combinations were accompanied by any internal re-adjustments.*

These combinations were made for industrial purposes ;

* The more important connections were made in 1920 and 1921 ; for instance, the Hoesch Steel works and the Köln Neu-Essener Bergwerksverein, Rheinstahl and the Arenberg Mines, Krupp and the mines Helene and Amalie and Constantin der Grosse, the Mannesmann Tube works and the Bergwerks Consolidation.

but by far the greater number of Interessengemeinschaften (for fusions were rare) were caused by currency depreciation, which stimulated inter-connection of firms in two ways. Banks had lost control; concerns were obliged to double and re-double their capital, and smaller firms could not keep pace. A firm in the finishing branches could escape financial risk and difficulty by financial agreement with a large heavy industry concern, and at the same time could conclude an agreement for the supply of raw material and thus free itself from the risks of the market.* Combination for financial reasons of course also took place between firms engaged in the same branch of production (for instance, between the Köln Neu-Essener Bergwerksverein and the Gewerkschaft Trier I-III), but it was the connections between finishing and heavy industry which gave rise to irrelevant belief in the merits of vertical integration.

Inflation stimulated concern formation in a more general way; excessive investment of profits in industry was one aspect of a phenomenon universally observable—the “flight to real values.” Some concerns invested their profits in their own works, to expand rather than to improve, since prices bore no relation to costs, others used their profits to acquire controlling interests in other businesses, not necessarily akin to their own. By 1922 it was possible for an English writer to speak of the four principal industries as dominated by four great “Roof-trusts,” Stinnes, the A.E.G., the Dyes Group, and (presumably) the Blumenstein textile concern. The statement was even at that time inaccurate, but excusable so far as Stinnes and the A.E.G. were concerned.†

* Connections of this kind were made by the Maschinenfabrik Augsburg-Nürnberg with the Haniel iron and steel works, by the locomotive works Henschel with the Essener Steinkohlen Bergwerksverein and Bergbau Lothringen. Only in one case, the connection of the A.E.G. with Linke-Hofmann Lauchhammer, was the finishing branch conspicuously the stronger.

† Stinnes had acquired a vast number of diverse companies, either by direct purchase or by various kinds of Interessengemeinschaft, in shipping, insurance, hotels, paper, oil, had made arrangements for reparations payments on his own power, had interests in Styria (with Castiglioni), Hungary, Jugo-Slavia, in fact in almost everything but chemicals, textiles, (at the time in the depth of depression) and other Ruhr heavy industry concerns. His prestige was enormous, yet groundless, for he contributed nothing genuine or lasting to the industrial reconstruction of Germany as

The "Konzernierung" movement therefore had no single incentive; contracts similar in form often had dissimilar motives. Of the eight or nine important Ruhr heavy industry concerns as they existed at the end of 1923, some had been formed to replace the connections broken by the treaty, others to secure raw material or working capital, others to invest inflation profits—some for two or three of these purposes. In spite of the great number of these agreements and changes of ownerships, and the rapidity with which they multiplied, they had little significance for the study of organisation, because they were unaccompanied by changes in management. Their principal incentive was the necessity of being independent of the market, not of adjusting output to the market's capacity, or of regulating market prices, and therefore not of rationalising (the word was unknown at the time). That is not to say that progress in iron and steel technology, fuel economy and chemical research, ceased during the four years of uncertainty—on the contrary; but the great advances were made by the Dyes Trust and the Thyssen concern and were not related to the "Konzernierung" movement.

The first real efforts at re-organisation began in the autumn of 1925, with the negotiations for the formation of the steel trust. Since the post-war development was to some extent a temporary excrescence, the industry's pre-war state must also be explained in order to understand the circumstances in which the plans for the steel trust were made. As is well known, the Rhenish-Westphalian iron and steel producers before the war found the method of production necessitated by modern practice incompatible with market organisation. Contrary to the general belief that the cartel was the typical German organisation, while the United States steel industry was remarkable for the extent to which it had carried out the principle of integration, the vertically integrated concern was

Rathenau, Thyssen and Duisberg did. The A.E.G. was much less of an agglomeration; its ramifications outside the electrical and allied trades were few, with the exception of the connection with Otto Wolff, a Jewish financier of Cologne who had acquired control of the Phönix mines and works, the Vereinigte Stahlwerke van der Zypen and the Wissener Eisenhütten A.G., now amalgamated in the Steel Union.

less typical in the United States than in Germany, since a large proportion of steel was produced by the open hearth process. In Germany in 1913 Siemens Martin steel accounted for less than half the total output and the connection of blast furnaces and steel works was therefore more common than in the United States of America. The cartel in its highly organised form was a German peculiarity; but the conflict between pure and mixed works was due to the advanced state of both forms of organisation. The three great concerns which amalgamated in 1926 date their vertical form to the early years of the century; soon after the formation of the connections which gave them their vertical form, in the years 1906-8, the great powers, Kirdorf, Thyssen and Stinnes were considering amalgamation. Though they never got beyond arguments as to their respective quotas, the fact that they negotiated at all proves that the present trust is not a new constellation of interests or a startling vindication of the benefits of horizontal organisation, but a natural development from the pre-war conditions, the inevitability of which was simply retarded by currency inflation.

Two problems faced the industry in 1925, of which the first, productive capacity about twice as great as that of the market, was the more serious. Even after the financially weak concerns had been wiped out by stabilisation, much wasteful organisation was left behind; the exchange between the associated works of the concerns, often situated at comparatively long distances from each other, of raw and semi-finished materials, the export of materials from works, ill-adapted by reason of their geographical position, the multitude of merchanting organisations, all contributed to increase costs. But it was the second problem which exercised more pressure on the combining firms: all were acutely embarrassed by shortage of working capital, and only able to secure the assistance of the bank by announcing their intention of complete re-organisation.

How far was the financial amalgamation accompanied by industrial re-organisation? The position of the trust is imposing enough. It alone of the Ruhr heavy industry concerns is independent of the market. It supervises the

import of its ore, owns seams in the Siegerland and Spain, controls the purchase of its own scrap. Its quotas are high enough to secure it a dominant influence in all the syndicates ; the highest, 60 per cent., in the Pig Iron Association. Through its subsidiary trading companies, it exercises a still stronger control over the iron and steel markets. Controlling about half the German iron and steel output, it is relatively more powerful than the United States Steel Corporation, which includes one-fourth of the American ; its coal basis is much wider than that of the American trust.* But however imposing its position, it has no significance except in so far as it has enabled it to re-organise.

Immediately after its formation it re-arranged the management of its works. The mines were divided into four groups, according to their geographical position ; only the Thyssen works needed no re-arrangement. The blast furnaces output has been specialised. The mixed works output steel production was concentrated in two large groups, the Western (chiefly Thyssen) and the Eastern (chiefly Deutsch-Luxemburg and Phönix) each with roughly the same annual output, 1.8 million tons. Expert orders are allotted so far as possible to the Western group works on the Rhine. The sales organisation has been centralised, only four of the large number in existence being continued.

But however thorough these measures of internal re-organisation, they will be entirely negated if the tendency to overflow and disperse, the weakness of all powerful trusts, is not checked ; if it is to fulfil its purpose of re-organising a large part of the European heavy industry, the centripetal

* The United Steel Works compared with U.S. Steel Corporation, 1926.

	U.S. Corp. Steel.	United Steel Works.		U.S. Corp. Steel.	United Steel Works.
	mill.t.	mill.t.			
Coal	27	30	Blast Furnaces	123	87
Pig Iron ..	13	4.8	Steel Works	25	14
Steel	17	5	Locomotives	1483	411
			Employees	247000	146000
			Capital RM.	3648 mill.	925 mill.
			Bonds RM.	1474 mill.	424.9 mill.

forces must not be neutralised by the centrifugal ; the trust, that is, must not acquire works which will not fit in with the concentration scheme, either in kindred branches in other districts or in the finishing branches. At first the trust announced a policy of limitation of sphere of production, illustrated by its willingness to agree with the condition of the A.V.I. (the representative association of the finishing branches) that the Steel Union should not extend to the finishing branches, if the A.V.I. consented to the international steel pact (of course there would be no means of enforcing the agreement on either side) ; and by its transference of all its finished steel production to an independent company, the Deutsche Maschinenfabrik A.G. (a new company to control the old Demag works at Benrath-Duisburg and the Thyssen machine works). But the policy has not been maintained ; not only did the trust secure control of the new Demag by various financial devices, but planned further extension into the finishing branches, which would have given it complete control of the tube-making branch (dominated by Thyssen and Mannesmann). Nor has it confined itself to the Ruhr district, having acquired an interest in the Mitteldeutsche Stahlwerke A.G.*

It is therefore difficult to assess the trust's value as a rationalising agent. There is no standard by which its success can be judged, since the financial position is not satisfactory and output figures are of course inconclusive, since the period 1927-28 was one of general revival. There is no positive evidence that rationalisation has benefited the

* An amalgamation of three firms which controls two steel works at Hennigsdorf and Lauchhammer (formerly controlled by the Linke-Hofmann-Lauchhammer—A.E.G. concern) and the Weber works (producing 120,000 tons, thick and middle plate annually), in Brandenburg ; it controls 26 million RM. of the concern's 50 million RM. capital, while the Linke-Hofmann concern controls 23 million RM. This interest brings it into relation with the Upper Silesian trust, of whose shares the Central German Company holds fifty per cent. It is not a particularly good investment since the character of the Central German works prohibits rationalisation on a large scale ; the works are not near together and own no coal or ore mines, the Lauchhammer works use lignite generators and electrical power supplied by the Saxon state ; the Brandenburg and Hennigsdorf works have the advantage of a cheap supply of scrap iron from Berlin. The locomotive and waggon works belonging to Linke-Hofmann have not been taken over by the trust ; their outlook is not favourable owing to the absence of demand for railway rolling stock.

combined firms, and no reason to believe that the results of re-organisation have not been counteracted by the tendency to dispersion. Nor has it acted as a rationalising agent from the standpoint of the industry as a whole. For thorough rationalisation, unitary financial control of the greater part of the industry is necessary and this the trust does not possess, nor is it capable of acquiring it. There is no likelihood of further concentration so long as the trust's financial position remains weaker than that of the other heavy industry concerns. These all carried out large extensions of their works in 1927, financed by foreign loans issued in 1925 and 1926, and converted to share issues in 1927. Rationalisation has in every case simply meant expansion.* The Krupp concern is the one exception; with the object of reducing transport costs it has carried out a re-adjustment as sensational as that of the Steel Union, amounting to a complete removal from the famous works at Essen to site more convenient for water transport, by extending the works at Rheinhausen and shifting the furnaces northwards to the Rhein-Herne canal by concentrating on the works at Essen-Borbeck. None of the larger concerns, Krupp least of all, are likely to find any advantage in financial connection with the trust in its present state, since they refused to do so in 1926, when all were in serious financial difficulties (Krupp even demanding a state subsidy).

Nor is there on the industrial side any prospect of closer co-operation; in fact the formation of the trust has definitely broken certain integrating links. The Krupp concern has been driven to construct its own tube works since the Thyssen and Mannesmann tube works ceased to take its semi-finished steel; Thyssen is now taking its raw material from the trust's works, and Mannesmann is constructing its own blast furnaces to avoid purchasing raw material at cartel prices and to escape from the possibility of the trust exerting pressure (after it had learnt the danger in a struggle with the trust from which it emerged only by creating plural voting shares). These new constructions, unaccompanied by re-organisation in the present state of market, are directly

* See Appendix III (v).

contrary to the principles of rationalisation, and would not have been undertaken, but for the trust's influence. Even if the trust had brought its own organisation to the highest level of efficiency, it has evidently had some retrograde influence on the industry as a whole.

Turning to the finishing industries, striking results have been achieved by those branches whose product permits of standardisation and specialisation, for rationalisation in industries with low overhead costs reduces itself to the economies which can be introduced by re-grouping of works for these objects, rather than for the purpose of concentrating production in the more efficient to reduce excess of productive capacity. Engineering, above all, has shown itself capable of responding to a "class A economic stimulus,"* i.e., a reduction of costs through re-organisation. The Verein deutscher Maschinenbauanstalten, a trade association including 80 per cent. of the firms engaged in the industry, has given strength and direction to the progress of organisation in every branch by insisting on the possibility of using the cartel as an instrument for rationalisation of this kind. But the movement has not made anything like the progress suggested by the Verein's publications.† Attempts to act on its advice have in many cases failed. The branches which have succeeded in using the cartel to introduce specialisation can rely on an expanding market and have not therefore encountered the rationalisation problem. Branches where the real problem does arise, for instance, locomotives, railway waggons and ore dressing machinery, have simply been driven to financial fusion after struggles to postpone re-organisation of any kind.‡

Other finishing industries whose product would permit economies of this kind—leather and technical porcelain, to take extreme instances of disorganised industries—have made no attempt at improving their methods of production, in the case of leather because the necessary preliminary, combination, is impracticable on account of the geographical distribution of the industry. The linoleum trust, the

* Stamp, *On Stimulus in Economic Life*.

† See Appendix III (iv), Rationalisation Cartels.

‡ See Appendix III (iii).

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product does not ~~by~~ improved methods and which cannot command the capital resources necessary to introduce re-equipment of the industry altogether, can undertake no rationalisation of any kind; textiles have in consequence made little or no advance.

The outstanding and only example of genuine rationalisation is of course the scheme carried out by the chemical trust. The United Steel Works and the Dyes Interessengemeinschaft together control one-fifth of the total value of Germany's industrial production; the magnitude of the two companies measured in terms of capital and the output is roughly the same. In every other respect the Dyes group is incomparably the more powerful. It controls 90 per cent. of the industry's total output, and though it must not be identified with the entire chemical industry (the works which it directly controls employ only one-third of all the workers engaged in the industry) it does in fact include all the prosperous and promising branches. Monopoly it was meant to be and monopoly in one branch it is. It was planned in all its completeness by Geheimrat Duisberg in 1904; in his famous memorandum of that year he put forward, with concise conviction, the now familiar argument for concentration—higher return on capital—and suggested the now familiar objection—bureaucratisation of management. But at the time the plan was rejected in favour of a less complete concentration, the Interessengemeinschaft, and from the five large firms arose two large groups, which never competed seriously, since both were members of cartels and in addition concluded special agreements among themselves for the sale of certain products. In 1916 their relationship became closer, the two groups making a general agreement and drawing in the two remaining firms. Thus the fusion of 1925 only brought about a closer co-operation between concerns which had co-operated for years, and would have been unnecessary, if all that had been intended had been a further exploitation of the market.

COMBINES IN GERMANY

ary to the priorities in this one case alone cannot been unanything but a secondary part. Its power : trust on its inclusiveness, nor on the great variety of products, but on the policy permitted by co-operation, securing financial independence by years of investment of profits in the concern. Unlike the steel union, it has concentrated its management in the hands of a small board, to which the directorate has delegated complete control, and which holds the controlling interest in the company. To this concentration of interest must be attributed the drive, method and success of its rationalisation plans, and the extreme reticence which has surrounded them. Apart from the fact that the trust has re-organised its works into four main areas under central management, it offers little information to the public as to the details and results of the scheme. It is clear that its power and prosperity rest on the high rate of return to scientific ability when concentrated, and the peculiar ability of the heavy industry to combine the manufacture of heavy cheap chemicals with that of light chemicals of high value; yet how far the further concentration has exploited these advantages, what new economies have been introduced, whether there is any ground for the accusation of bureaucratisation, remains matter for surmise.

From survey of the whole field of the trust's activities two principles emerge: limitation of its own sphere and maintenance of market control through the cartel. In the newer branches, fertilisers and artificial silk, it has preferred to construct new works rather than to acquire existing ones. In 1925 there was no branch of the chemical industry which the I.G. could not have bought up; extension into the heart of the heavy industry itself would have been fatally easy. Yet it has consistently refrained from acquiring any interest in a financially weak firm or in a firm which would not fit in with its general scheme, unlike the British trust.

The trust is not open to either of the accusations commonly made against the industrial combine: it has not striven to maintain the technical *status quo* by monopolistic control; on the contrary, its power rests on a series of

innovations and discoveries. Nor has it used its bargaining power alone to crush other producers out of existence ; where it has done so, its technical superiority has been the sole cause. The few branches where the small producer still has an economic *raison d'être* have been, as a rule, left undisturbed. If the soundness of its expansion, coupled with its scientific achievements, has had to be purchased at the price of concentration of stock ownership and complete absence of publicity, there can be no doubt that the trust has contributed more to Germany's industrial re-construction, from the "gesamtwirtschaftlich" standpoint, than the Steel Union, with its wider distribution of stock ownership, its slightly more lavish output statistics and more intelligible balance sheets, which has carried on destructive struggles with the iron and scrap trades and other heavy industry firms in which it has exploited its bargaining power to the full, which has not expanded on its avowed principles and has as yet given no proof of the value of rationalisation. But the price which has been paid in this case suggests that rationalisation is not a policy which is likely to work out in accordance with social ideals.

CHAPTER IV

THE TRUST AND THE STATE AS RATIONALISING AGENT

(i) THE TRUST

From the experience of these industries, two principles emerge. All the most sensational results have been achieved by trusts, though the great number of fusions only control a part of the total capital engaged in the industry and can only introduce schemes for partial re-organisation benefiting groups of firms, not the entire industry. This has been the case in the engineering, clock-making and pottery branches; their experience proves that plans for co-operation amounting to rationalisation of the entire industry can be evolved with far more likelihood of success on the basis of agreement between large firms already internally re-organised than if the preliminary is complete fusion of a great number of dissimilar firms of varying levels of efficiency.

The cartel is not as a rule a suitable instrument for reorganisation, except as a preliminary, a guarantee that the work done will not be wasted. The experiences of certain engineering branches, acquired largely through the pioneer work of a brilliantly organised trade association, proves that the cartel can be used as a rationalising agent in various ingenious adaptations of the usual cartel system, but only in exceptional circumstances, and even then with great difficulty. The cartel is far more likely, if successful in its capacity of guardian of the outer defences, to postpone internal re-adjustment.

This superiority of the trust as a rationalising agent is now generally recognised, as it was not before the war. Twenty-five years ago, social considerations gave a certain value to the cartel as a final form of organisation, as opposed

to the trust. By maintaining as many independent producers as possible, it preserved the middle class, and was besides celebrated as a peculiarly German institution. These considerations carried great weight against those who stressed the purely economic aspect, to whom Dr. Schacht at that time belonged. His opinions were, for that time, expressed with unusual vehemence: "I see no social danger in the development of the great undertaking." Trusts economise and improve "not so the cartel! The cartel's object is to judge the actual market more accurately, its conditions, its capacities and movements. . . . The cartel means stagnation and falling off in production, weakness in international competition, increased injustice in distribution. The trust means progress in production, power in international competition, and a wider distribution of income. The cartel is morphia, the trust the elixir of life!"*

In 1927 the same argument could be presented as an incontestable fact: "I estimate the present industrial capacity of the world as about 50 per cent. greater than before the war, with purchasing power considerably reduced. The result is an enormous over-production. Everyone competes with everyone else and no one makes a normal profit. I think the chief question is: how can low and reasonable costs be combined with a respectable return? And I see the only solution in a really powerful horizontal concentration. I do not believe that cartels are very important in this respect. They depend on the course of the business cycle, are easy to get out of; and also frequently serve to keep prices up. I object also to Interessengemeinschaften, because in their case interests are not ultimately identical; they are usually pooling arrangements, and it seems to me a purely ethical question, as I understand it, if a director says, 'I ought to show that I can do something special, though I know I get no more out of the pool for it.' There were Interessengemeinschaften in the chemical industry, and of course it was not possible to manufacture as cheaply as was necessary. Therefore, in my opinion, there is only one basis, that is a genuine fusion, one company, one management, one interest.

* Articles in the *Preussisches Jahrbuch*, 1902-03-04.

I am convinced that this concentration is an absolute necessity to Europe's permanent existence."*

But though the trust movement can be credited with a positive achievement, even if not so considerable as is generally believed, the reverse side of the combine movement is not thereby obliterated. The fear that the combine movement may have some undesirable effects is not necessarily an antiquated prejudice. Power to re-organise implies power to hinder re-organisation as much as it ever did ; however essential concentration may be in the post-war world, there has been no change in that world so fundamental as to remove the possibilities of injurious trust policy which loomed so large in the pre-war world. A so-called rationalisation scheme may work out as an uneconomic re-adjustment ; no economic development is ever wholly salutary.

German conditions have, however, produced a composite typical organisation—the cartel, whose members are a few large concerns, differing in size, but not differing so much as to compel absorption of the smaller members. The complex interactions of this type avoid many of the strains and abuses of the pre-war organisation. It would be false to conclude from the conspicuous and popular character of the fusion that the cartel has been superseded in the past few years. On the contrary, its existence has never been more vital. The cartel and trust act as adjuncts to each others' beneficial tendencies, deterrents to each other's possible deleterious effects. Before the war the besetting evil of cartel organisation was the stimulus it gave to over-investment in any branch whose market had been genuinely controlled. Cartel after cartel in the heavy industry broke up under pressure of their members' demand for higher quotas. Other branches, above all, cement and lignite (in the Central German area), passed through the same vicious circle of price fixing, expansion of old works and foundation of new, over-production and resultant collapse of the cartel. This danger has been partially diminished by trust formation ; the fewer

* Evidence of Geheimrat Deutsch (director of the A.E.G.) before the Enquête Ausschuss, 1927.

the members of a cartel, the less likely they are to expand their productive capacity beyond the capacity of the market, the more likely to forecast the expansion of demand. The existence of the cartel gives the trust or concern an incentive in the form of a guaranteed market to rationalise its production, and the concern, by doing so, ensures the existence of the cartel by permitting price reductions which would otherwise wreck the cartel. Conversely the special danger of the financial combination, over-capitalisation, is counteracted by several factors, of which the maintenance of other producers by the cartel is only one ; unsound financial policy is checked if the concerns must compete in the capital market. But the traditional tendency of the German industrialist to investment in the concern and the high rates ruling in the home market have undoubtedly acted as more adequate preventives of over-capitalisation in recent years.

Thus the peculiar soundness of the combination movement in Germany and its suitability as a rationalising agent lies on a roughly worked out balance of the two forms, possibly temporary in character. In this arrangement the trade association has a special function, which has in recent years become increasingly important, and which neither the cartel or the trust can exercise. Stabilisation of business conditions—not by control of prices or output, but by observation of the course in the cycle and adjustment to it, is now regarded in Germany, as it has been for so long in the States, as the inseparable accompaniment of rationalisation and a task which the industry can itself perform. German industry is of course not so advanced in this respect as American, but certain trade associations—the Verein deutscher Maschinenbauanstalten above all—have achievements to their credit which disprove the assertion that “ the successful prediction of the course of particular industries is not yet established as a practical business proposition.”* The work of these associations is the more necessary as the confused character of the money market, the apparent absence of any relation between the movements of the three markets, has in the past few years made general prognostication almost impossible

* Balfour Committee, *Final Report*.

and rendered the official publications of the Institut für Konjunkturforschung wholly futile as far as forecasting is concerned.

The common arrangement, the cartel whose members are a few large concerns, is of course not rigidly systematised. The balance is not always maintained, and in the coal and iron industries its existence is very precarious. The tension between trust and cartel has often resulted in the latter's dissolution; nor is the movement altogether free from the suspicion of over-capitalisation or exploitation of the market. But, when all the weak points have been considered, it cannot be denied that certain German industries have evolved a type of organisation capable of dealing effectively with their own problems—as for instance, the concerted efforts of the steel industry to control its own purchase of scrap iron, the coal industry's great gas transmission scheme. Those branches have achieved a final form—final in that it represents in effect as high degree of concentration as if the industries were merged under one financial control. It is extremely probable that in these branches trustification will go further, though there is no reason why it should in the near future become complete, even under the pressure of severe economic crisis.

So far as market control is concerned, the arrangement is final in form only, not in scope; the German industrialist, since 1925, has regarded syndication of the internal market as a step towards control of the international markets, by means of international alliances, which alone would enable the export subsidising syndicates to rationalise their systems of quota allotment.

(ii) THE STATE

But certain industries have not succeeded in working out even a temporary balance of this kind. Their inability to achieve any kind of concerted direction, let alone any kind of re-organisation, throws the success of the heavy industry into more striking relief. Compared with the scale of the British industries which are suffering in the same way from impotence to deal with their own problems, these industries

are insignificant, but yet are quite important enough to raise the question of the part the state should play in promoting re-organisation, when an industry has reached such a degree of inertia that it cannot take even the first step in a rationalisation programme. In Germany the enforced cartel appears an obvious means of dealing with an uncommon industrial situation: the situation in which the industry is suffering from production in excess of market capacity, and in which re-organisation would certainly place the industry on a profit-earning basis. The cartel under such circumstances is not regarded as a step towards "cold socialisation" (which has only been carried through in aluminium, where there is no prospect of profit-earning). Once the power of re-organisation to increase profits and the industries' genuine impotence are admitted, the case for state interference seems perfectly clear: the German industrialist is not only accustomed to a much wider field of state enterprise, but also to emergency interference of the most varied character, state subsidies and management of industrial concerns, government campaigns to reduce or raise prices, compulsory arbitration, and therefore, although his influence on government policy has declined since the pre-war period, he regards state intervention without either doctrinaire aversion or favouritism, so long as it aims at putting the industry on a profit-earning basis. This attitude, the purely "privatwirtschaftlich," must be sharply distinguished from that which inspired the post-war "Planwirtschaft" cartels, self-governing constitutions for the great industries, the outcome of ideas current in most European countries after the war, representing a genuine compromise with "cold socialisation" and not a substitute for it. The situation in which they originated was in fact the reverse of the case here considered—urgent necessity of increased output.

The question of state interference must first be limited to this standpoint: how far can a compulsory cartel put an industry on a profit-earning basis? For that is the only standpoint from which a compulsory cartel is desirable: if social or national considerations come first, nationalisation is

the proper means of dealing with the situation, and if the cartel is created on such grounds it can only be as a recognised transition stage. Assuming then, that the industrialists' belief in a normal rate of profit is legitimate*—as it of course is not—and that the state can properly intervene to maintain the rate of profit—as it of course can not, the compulsory cartel appears a genuine remedy for over-production as such. Its effects resemble those of the cartel in other branches, except that the danger of under-selling is removed. Under-selling in these industries does not indicate an excessively high level of cartel prices and profits, as in other branches it may do, but represents forced selling on the part of the weakest producers. A state scheme can and must make provision for closing down works, as the voluntary cartel, at its best, can rarely do, and on the effectiveness of this provision the success of the scheme depends. For if successful the cartel price must carry the cost of closing down the less efficient works, and this is probably in the long run more likely to increase the profits of the larger firms than if it continues to carry the cost of running the inefficient works, for under the first system cost reductions by concentration are possible. The industries to which this policy has reference fall into three classes :

(1) The industry whose voluntary organisation is partly responsible for the congestion of the market, and which cannot, on its own power, improve the situation by altering the organisation. Of this class, potash and cement are prominent examples to which British industry can offer no parallel.

(2) The industry in which over-production is directly due to absence of organisation ; the case is common enough for short periods, but lasting in few. The cigarette manufacturers are the extreme example.

(3) The industry which must face catastrophic loss of markets, which includes some members of the export industries, the railway rolling stock manufacturers, and the Siegerland ore industry.

The typical British case, the combination of (2) and (3) does not arise in Germany.

* See Chap. VII.

(1) The only genuine extant German specimen of a compulsory cartel, the potash syndicate, has been used *ad nauseam* as a basis for discussion of the value of compulsory syndication, rather unfortunately, as it presents many peculiar features. Before 1910 the industry failed to achieve any organisation capable of closing down mines working with excessive costs, and the compulsory syndicate intensified the situation rather than improved it. It did not, however, fail simply because it was compulsory, as Mr. A. P. L. Gordon (*The Problem of Trust and Monopoly Control*, 1928) suggests. Mr. Gordon states that the cartel has "served as a severe warning against the formation of compulsory syndicates" and failed, because all compulsory cartels must fail "until industry at large has had time to determine what proportion of its aggregate effort shall be devoted to any particular branch of production," meaning no doubt that a cartel cannot prevent a branch of industry increasing its output as long as it is profitable to the members of the cartel to do so. In the case of potash, restriction of output was really desirable in the members' own interest, as Mr. Gordon recognises. The 1910 syndicate failed because its provisions concerning the sinking of new shafts and opening of new works were not stringent enough. It gave an impetus to concentration by permitting the transfer of quotas (not permitted under the previous voluntary contract) a necessary clause, throwing the cost of closing down mines onto prices. The 1919 law improved considerably on that of 1910; in addition to the clause permitting transfer of quotas, it gave the Reichs-Kalirat power to prohibit the sinking of shafts and to close down mines giving compensation. A special measure, the Closing-down Regulations, came into force in 1921, making further arrangements for the re-assessment of quotas. Under the joint influence of the new law and the impetus to concern formation given by inflation, amalgamation proceeded so rapidly that by 1926 two groups, Wintershall and Salzdettfurth, controlled practically all mines between them: against thirty groups of works in December, 1920, there were only nine in December, 1928. When the closing down action terminated at the end of 1925 out of 224 shafts

in existence 118 had been closed till 1935, these 118 owning over 45 per cent. of the total syndicate quotas.*

In spite of this drastic reduction, the industry was only employed to one-third of its capacity in 1926. Since the pre-war period the industry has lost its monopolistic position, not, as was feared, by the cession of the Alsace deposits, which has been overcome by international agreements, but by the I.G. Dyes introduction of mixed fertilisers. So serious was the outlook that the Minister for Economic Affairs considered a plan for compulsory fusion. In 1927 the market revived, works were employed to 70-80 per cent. of capacity and plans for amalgamation faded temporarily into the background. The industry cannot continue in its present state without either complete amalgamation under state control or else alliance with its competitors in the fertiliser field, I.G. Dyes or the Ruhr coal industry. The Wintershall concern has in fact already taken the first step of an agreement with Klöckner.

The 1919 cartel, therefore, did not put the industry on a prosperous footing, but it undoubtedly checked further expansion and was for that reason successful in its main object. Though it was not a remedy for the industry's depression, by stimulating fusion and preparing the way for its own extinction, it did exactly what was needed.

The situation in the cement branches, closely resembling that of the potash industry, except that the existing cartels have local, not national, monopolies, urgently calls for state-intervention for the same reasons ; further, the state, as the principal consumer, has a special interest in the industries' sound development and a means of compelling co-operation in projects for market control. Nor would state control come as a novelty in this branch ; a compulsory cartel could easily have followed on after the war organisation which prohibited erection of new works. The present excess of productive capacity is due to the existing syndicates, which have stimulated investment instead of retarding it ; in order to stand the strain of maintaining prices high enough to cover costs with plant working at half its capacity, they have

* Ausschuss zur Untersuchung . . . III Unterausschuss. Die deutsche Kaliindustrie, 1929.

been compelled to use discriminating rebates, dumping prices, and all the pernicious practices at their disposal. A state scheme would probably reduce prices, since the cost of closing down works could not exceed that of running existing works at half their capacity, and in addition, the abolition of dumping prices in the "zone" areas would probably permit a reduction in the monopolised areas.

In both these branches the compulsory cartel has been, or would be, the source of much difficulty and friction. But it cannot be denied that, if the compulsory closing down was accompanied by cost reduction arising from concentration in the larger works, the maintenance of an artificial price level would improve the profit-earning capacity of the industry, and would not be any more injurious to the consumer than the present state of affairs, because increase in profits would result from re-organisation; not from the artificial price level alone. The greater the success from the profit standpoint, the more fundamental the re-organisation involved, and the closer grows the state's relationship. As a "privatwirtschaftlich" remedy the compulsory cartel is justified. If the state is not prepared to maintain an artificial price level, its only course is to throw the cost of closing down from prices on to profits, under a nationalisation scheme.

The coal syndicates system of regulation hardly enters into the question of the state's ability to act as a rationalising agent, since it intervened in the peculiar circumstances of the post-war fuel crisis, on account of the industry's basic character rather than its depressed state. The present mechanism, an executive council, the Reichskohlenrat, including one representative of labour interests, and the deliberate assembly (Reichskohlenverband), representing the interests of mine owners, workers, consumers and traders, was the outcome of "Planwirtschaft" theories current in 1919 and embodied in the coal industry law of that year. At its origin, it was regarded as a prelude to complete socialisation, though that was never attempted. Under the same law, syndicate membership became compulsory for all producers of coal and lignite. The syndicate's function should be to make proposals

for the Coal Council and Assembly to sanction or reject ; prices and output were to be regulated by the statutory authorities. But the system was not wholly self-governing : the Minister for Economic Affairs could annul any decision of the Council or Assembly. Until 1924 the mechanism was not really called upon to act : expansion, not restriction of output, was the urgent necessity while regulation of price was impossible, and in November, 1923, the Council and Assembly delegated the power of price fixing to the Ruhr syndicate, to give it greater flexibility in chaotic conditions. This power was not withdrawn until three years later, when the syndicate attracted the minister's attention in 1926 by raising prices on its own authority, from which time on state price control for the first time became a reality. Under pressure of intensifying competition from British coal in the contested area, the mines syndicate repeatedly requested the minister to sanction a rise in prices in the uncontested area in order to subsidise the competing mines, and the request was repeatedly refused. The refusal had no obvious grounds, for the general price level was rising, industrial revival had markedly set in several months before, a wage increase had recently been enforced, and a committee appointed by the Coal Council had found that the rate of profit on certain qualities of coal was not excessive and justified a rise in price. The motive for the minister's refusal may have been disapproval of the system of subsidising the contested market at the expense of the uncontested, a system which, as we saw, only complete rationalisation could dispense with. But so far no attempt has been made to use the system of regulation to introduce a closing down scheme.

(2) In the other branches which have asked for compulsory cartellisation, the state has restricted its interference to temporary alleviations and facilitating devices in the British manner, without any effect other than postponing the industries' own re-organisation. The industries in consequence have sunk deeper into depression : as their recuperative power declines, the capital resources at their disposal decline also, and as under-selling continues the number of those compelled to under-sell multiplies.

But the industries concerned, in spite of the severity of their sufferings, are not of sufficient national or social importance to merit compulsory syndication. The cigarette manufacturers, basing their claim for special treatment on their importance to the state as a source of revenue, demanded compulsory syndication in 1926 and 1927. This the Finance Minister rejected, introducing instead a feeble measure intending to deaden the force of competition by permitting manufacturers who complied with certain principles in their rebates with the trade to re-claim part of the tax paid. The measure had an effect exactly the opposite to what was intended. The chaotic state of the market was due to undercutting on the part of the smaller producers which, owing to the ease with which a new firm can enter the market, and the difficulty which it subsequently encounters in competition with the financially powerful firms, rose and fell rapidly; the new firms, under the tax re-claim system, outbid the larger firms in their offers of rebates. Thus the struggle was simply intensified. After four years of destructive competition, the small firms, weakened by the bad harvest of 1928 which left the big firms with their own purchasing organisations untouched, at last agreed to join a price supervision scheme set up by Reemtsma, one of the two chief concerns of the industry, which at the same time amalgamated with a number of medium-sized firms, and introduced a re-organisation scheme. In spite of its severity, the struggle did not represent serious destruction of capital, as it would have done in potash and cement, and the consumer was benefited by the rapidity with which numbers of excellent new brands appeared at low prices, even if the quality declined with equal rapidity. As the industry was finally able to find its own solution, the state's refusal to intervene further was fully justified.

(3) The two branches suffering from excess of productive capacity through loss of markets, the locomotive and rolling stock manufacturers, asked in vain for government assistance. In both branches the contraction of the market was sudden and severe.* Even before the war the railway waggon

* See Appendix III (iii).

branch was only occupied to 80 per cent. of its capacity and in the post-war period as a result of the new construction undertaken by the Reichsbahn it doubled its capacity: by 1923 there were seventy works against forty before the war. When its request for compulsory syndication was refused it produced a unique type of combination as a preliminary to re-organisation: a contract under which the Reichsbahn agreed to allot quotas to the thirty members of the association, on the condition that they should re-organise their production. Rationalisation was simply postponed as each member was guaranteed a market, though the device might have succeeded had the Reichsbahn promised higher quotas to firms which could offer evidence of re-organisation. Eventually the industry began to take the inevitable course of trustification, amalgamating into two groups, though, as yet, these do not include the greater number of firms in the industry.

The contraction of the locomotive branches' market was even more acute: the number of locomotives constructed for home and foreign markets declined from 4,052 in 1913 to 615 in 1926, having reached 5,370 in 1921. But in this case the government rightly rejected the industry's demand for a subsidy, as the works affected by the depression are departments of large firms, with sufficient capital resources to re-organise themselves, which, towards the end of 1928 began to conclude specialisation agreements.

The only instance of a subsidy to an industry of this kind is that given to the dying Siegerland ore industry, of which the object was purely social. The industry is faced less by loss of markets than by rising costs, which no organisation or rationalisation scheme can avoid; it can only escape by closing down the mines, which the state desires to avoid for the sake of the industrial population.

The experience of these various branches suggests that though state policy has been anything but "swift, effective and sweeping,"* in these cases, it would have been prepared, had it been encountered by a situation like that of the

* Cf. Michels: *Cartels, Combines and Trusts in Post-War Germany* (1928), p. 177.

British heavy industries, to apply any of these methods—the enforced cartel accompanied by closing down regulations, the market guaranteed on condition of rationalisation, compulsory amalgamation, the subsidy to the districts without hope of economic working in the interests of the population. Wages and hours are already fixed by compulsory awards throughout the heavy industry, prices are subject to close supervision, so that a far-reaching scheme for amalgamation and closing down would come as a matter of course. The state cannot interfere in all cases of weak and inefficient organisation to raise the rate of profit—otherwise prosperous new branches would be drawn into its sphere, but it has shown itself prepared to take the “privatwirtschaftlich” standpoint as an instrument of national or social policy, an attitude which seems inevitable, if it is considered advisable for the state to intervene at any date in an industry’s history before it is working without profits, and it must be admitted that such intervention is advisable, not only from the standpoint of the industrialist, but also from the standpoint of national or social policy. For if nationalisation is considered in itself desirable, then it is easier for the state to take over an industry in a state of artificial prosperity than of bankruptcy. If nationalisation has to be postponed, the compulsory cartel is a better interim measure than abandonment to further depths of depression, for the rate of profit will only be raised if production is rationalised, i.e., if the state’s intervention goes very deep: the greater the “privatwirtschaftlich” advantages, the closer the state of affairs comes to state management, the more impossible it is for the industry to dispense with the state mechanism.

There are not, as a rule, wide opportunities for state intervention without enforced cartel membership. The state can, of course, through research agencies or special export departments, assist and co-operate with individual industries in their efforts to fix standards or terms of delivery. In Germany the Reichskuratorium für Wirtschaftlichkeit has undertaken this work for four years with marked success; it has carried out twenty-seven agreements for codification of terms and standardisation. Intervention of this kind

deserves the name rationalisation, since it improves the industry's profit-earning capacity (though only if the state's action involves some re-grouping of interests—that is, if the industry's own trade associations cannot carry the codification through themselves.) In one case at least, the official committee can be credited with a striking success in codifying and standardising terms of delivery. The market for leather belting, a small scale scattered industry, could not itself escape from chaotic conditions: consumers, through ignorance of the economic and technical conditions of production, gave orders containing requirements which were technically and economically impossible to fulfil, but with which the manufacturers—also through ignorance—attempted to comply, with the result that they were burdened by excessive stocks and competition from inferior products, wastage through use of high quality material for inferior purposes, and continual disputes. In this particular case, the state alone could have taken action; large sections of the industry, penetrated by the lingering traditions of hand-work, regarded all co-operative efforts with distrust; only the assurance of complete impartiality could gain their support. But few industries offer so wide a scope for intervention and are at the same time unable to remedy their position; usually the depressed industry requires valorisation of the product and compulsory closing down.

The compulsory cartel then can be approved either by the capitalist entrepreneur, by the type of socialism which regards state managements as in itself desirable, and by those who desire to maintain an industry to avoid great dislocations of the country's economic life. Current German economic theory is equivocal. Orthodox theory which interprets the economic system, in terms of costs and utilities working through the mechanism of prices, has of course no contribution to make: it cannot take account of dynamic factors, except as friction, and therefore cannot treat industries as young or old; it must let the industries die. The most influential single theory, that of Schumpeter would presumably advocate the compulsory cartel. For Schumpeter regards the state of working without profits

as the normal state of the established industrial firm and therefore presumably of the established industry. Profits are due to the exercise of entrepreneur activity (or innovation) and if there are no possibilities of re-organisation, there are no possibilities of innovation. If the state alone at any given stage can re-organise, the state takes upon itself the entrepreneur function, and is entitled to the profits derived from the exercise of it. In Schumpeter's theory there is no criterion of utility and therefore no question of obligation on the part of the state to exercise this function, only the assertion that the state's activity, if it enforces cartel membership, is entrepreneur activity and its policy squares with the capitalist system, not with orthodox socialism. If, on the other hand, the state does not intervene till the product is produced, "kreislaufmässig," i.e., without profit, its intervention is a necessity in a world which relies on the working of the entrepreneur motive, if the industry is to continue. This inability of the two current types to contribute to the analysis of the combination problem arises at every point, prohibiting any coherent analysis on such matters as price policy, the transmutation of the risk function, and the stabilising tendency of the combination movement.

CHAPTER V

THE ACHIEVEMENT OF THE COMBINES

IF the spread of producers' combination has only rarely been associated with complete re-organisation of production, the cartel and trust can none the less be credited with definite success in attaining two objects—cost reduction and extension of the market, though since the cost reductions and market extensions are affected by the weapon of combination, not by greater productive efficiency, the method of attaining them does not merit the term rationalisation. Clearly enough activities of this kind may give an industry assistance which is in the general interest undesirable (as its opponents believe the Ruhr gas scheme will do), though on the other hand, there can be no *a priori* objection to an industry utilising its organisation to attain the purposes common to all industrial undertakings, whether operating collectively or individually. Each industry has adapted the cartel or trust to its own needs, in accordance with the relative importance of the elements of cost and the character of the market, and their success and failure can only be appreciated in the particular industrial setting.

A. IN THE HEAVY AND FINISHING INDUSTRIES

I. COST REDUCTION

(i) *Overhead Costs*.—At the inquest on competitive capitalism, Professor Schmalenbach* has brought in a verdict of death owing to rising overhead costs. But in the industries where the proportion is highest, cartel organisation alone did not succeed in killing competition. Regular employment of plant in the heavy industry is necessitated by the technical conditions of production. Ruhr coal, like German scholarship, goes down deep and

* Cf. Weber, *Das Ende des Kapitalismus*, 1929.

comes up dirty; its quality is good, but it must be subjected to a cleansing process of some sort before sale. Seams are irregular, lie at considerable distance below the surface, are very much faulted, highly inclined, and are on an average thinner than in the most economical sections. Conditions, that is, are exceptionally difficult and fairly uniform. Since costs do not vary much from mine to mine, combination was facilitated, and at the same time necessitated, by concentration of producers in a small area in which, under competitive conditions, prices would have fallen below the level of average costs. High overhead charges necessitated from the first a large unit of production, a necessity which grows yearly greater as the industry shifts further to the northern side of the seam. In this predominance of overhead charges—wages accounted for 50 per cent. of the total costs of three representative Ruhr mines in 1927—lies the root of the contrast with British conditions.* In steel the same contrast appears, though it is not so marked; in the German industry the large unit prevailed from the first, owing to the use of the Thomas process; but regularity of employment is not quite such a pressing necessity as it was in the pre-war period, owing to the increase in productive capacity and the increased use of the Siemens Martin process.†

The early history of cartels in these branches is too well

* A contrast which appears most strikingly in the reports of the two coal commissions: the German report devotes twenty pages to discussion of the proper amount to be allowed for depreciation, one page to wages.

† Increase of productive capacity, so far as blast furnaces are concerned, has been immensely greater in Germany than in Great Britain. Of 376 furnaces, 160 were lost as a result of the treaty, and the remaining 216, in 1925, when only forty per cent. were in blast, produced the same volume of output as before the war when all were in blast. Capacity of the furnaces of the large Rhenish-Westphalian works is said to have increased from about 500 metric tons daily to 1,000 tons. In other districts 100-300 tons daily remains the rule. No information exists as to the average capacity of the steel works. Before the war the usual capacity of the Thomas furnaces was 10-15 tons per heat, of the Siemens Martin 20-30; at present the larger Thomas furnaces produce 25 tons and over and the Siemens furnace producing 80-150 tons is not uncommon. Compared with the figures in Part IV of the Balfour Committee's report these estimates suggest that the German increase in steel works' capacity has also been greater than the British increase, though the difference is not so great as in the case of blast furnace capacity.

The proportion of steel produced by the two processes has been reversed since 1913, chiefly as a result of loss of territory. See Appendix I (ii).

known to need repetition here. Yet though frequent dissolution prevented the heavy industry cartels from securing more regular employment of plant, they were not responsible for their own failure. Given stable financial conditions, the iron and steel cartels could probably have solved the problem. The cement industry, on the other hand, could not; its own organisation was partly responsible for its difficulties. It presents the classical example of the limitations of the cartel in dealing with this problem, for fixed costs represent a higher proportion of total costs than they do in any other industry; labour costs at present account for not more than 15-17 per cent. of the total. The necessity for regulating output is greater than it is for iron and steel, since over-production always threatens an industry with a single and locally limited market. Further, regular employment of plant in this branch safeguards, even stimulates, technical efficiency,* as it does not, necessarily, in iron and steel; unlike the western mines and steel works, which differ very little from each other in technical efficiency, the cement works, less locally concentrated, have not all reached the same level. Since overhead costs are proportionately higher for the technically more efficient firms, restriction of output is more objectionable to them than to the technically backward, which can reduce their wages bill with more effect on total costs.

Cartels formed in any industry with high overhead costs inevitably incur the danger of stimulating over-investment. A cement combine, once formed, has a natural monopoly in its district, since new works cannot easily be established. In other countries, combines have exploited the natural monopoly by using the trust form of organisation, but in Germany the choice of the cartel method has diminished the effectiveness of combination. No pre-war cartel could effectively check over-investment. Although the cement market expanded since the 80's, it expanded irregularly, and every slight increase in demand stimulated erections of new plant which were not actually necessary. Associations, from the 90's onward, composed but to re-compose, arising in an

* G. Kühn, *Die Zementindustrie*, 1927.

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over-stimulating outsiders to increase their output and under-sell, then disorganising under the resulting over-production. Since industries of this type cannot reduce output when prices fall, but must continue to produce the same volume even if prices fall below the cost level, competition when it broke out went to violent lengths, until depression drove producers to negotiate for a new cartel. The industry tried again and again to evolve a type of organisation from which the weaknesses of the previous type would be absent; combination progressed spasmodically from the loose price convention to the highly organised syndicate, by well marked stages, separated from each other by competitive interludes becoming ever more serious as the level of fixed costs rose and prices became more sensitive.

In the post-war period the growth of trusts has strengthened the three existing syndicates.* But though the industry now ranks as one of the most highly organised, trust formation has not gone far enough to stabilise the market. Two trusts, the Westphalian Wicking concern and the South German Heidelberg concern, now control between them rather more than one-quarter of the total German output; the Silesian trust, covering one-tenth of the German output, controls the whole output of its district. Though the western syndicate succeeded in maintaining the same price level for four years from 1924, it did so only by permitting price cutting in the "zone" areas, i.e. where outsiders compete, and by using discriminating rebates.† The industry is again threatened by excess of productive capacity, not due, as formerly, to over-investment on the

* At first sight it appears as if the formation of trusts weakened rather than strengthened the syndicates, since the Westphalian cartel dissolved in 1925 under a decision of the cartel court that the growth of a trust altered circumstances sufficiently to justify withdrawal from the agreement. At that time the Wicking concern controlled fifty-two per cent. of the syndicate's output; the syndicate was reformed soon afterwards and owing to the inclusion of outsiders, the concern's quota was reduced to forty-two per cent. Thus the dissolution signified only a re-adjustment, not a real weakening. The trust's influence secures the maintenance of the syndicate because its own interests are bound up with its continued existence, not with its control.

† The practice was prohibited in the case of the steel cartels in April, 1928, but not in cement until March, 1929.

part of the industry nation here. erect though frequent works by the Ruhr steel concerns (which doubled output in 1926). During 1927-28, a period of revival, a greater number of works were occupied to only 60 per cent. of capacity—the Wicking concern to only 40 per cent.

The industry cannot continue in its present state. No cartel can carry excess of capacity on this scale unless it has legislative support—as potash—or unless overhead costs are low in proportion—as in jute and porcelain. Nor would trustification be a complete remedy—as in coal and steel it has almost been—since the works of the steel concerns could not be included; its future progress should be accompanied by compulsory cartellisation and price control. As the industry was subjected to a rigid system of control during the war period, "cold socialisation" would not come as a new development.

(ii) *Transport*.—The problem of reducing transport costs also chiefly concerns the heavy industry, and is really acute in the mining industries only.

If the coal syndicate has failed to rationalise production and marketing in the Ruhr, it must not be condemned as if it had failed in its essential purpose of market control. In addition, it can be credited with an inestimable achievement: it has enabled the mines to deal as a single unit with the problems arising from the geographical limitations of the market, in the pre-war period by direct action, in the post-war period, with its influence on the Reichsbahn declining and its area of supply narrowing, by ambitious attempts at cutting out transport costs altogether.

The syndicate's problem is, and always has been, the difficulty of finding markets—a problem due to the Ruhr valley's geographical position.* It is important to realize how peculiar this is. The coal belt which begins on the Atlantic margins of Great Britain stretches across northern France by way of the Limburg and Aachen seams to the Ruhr valley, then disappears under the North European plain, to

* P. de Rousiers, in *Le Régime Légal des Ententes*, 1928, is the first writer to recognise that the geography of the Reich was responsible for the difficulties of its pre-war organisation.

reappear in the valley of the Upper Oder ; Germany, from the mountains in the south to the northern seas, from the Rhine to an indefinite boundary somewhere east of the Vistula, must take its coal from these two seams, one in the extreme north-west, the other in the extreme south-east —“ fern von gebildeten Menschen, am Ende des Reiches.” (The coal deposits of the Saar are not part of the main European seam, nor are the small seams in Saxony and Lower Silesia, and in an outline of the situation they may be ignored.) Of the two large seams, the Ruhr is by far the more important ; the Silesian seam contains about half as much coal as the Rhenish-Westphalian (though half as much again at moderate depths). Neither of the two coal fields can easily supply Central Germany or the northern ports, not only on account of their distance from them, but because there are no natural lines of communication between east and west. The industrially eventful areas lie in the hilly country between the chain of the central mountains (Riesengebirge, Franconian forest and the Rhine massif) and the northern plain. To north and south the Ruhr has good waterways, the best in Europe, but not to the east and west, for the Moselle is not navigable and the Mittelland canal not completed. Silesia must rely altogether on railway transport, as the Oder is not navigable above Cosel. Central Germany and the northern ports have alternative sources of supply, the former from the lignite deposits of its own area and Bohemia, the latter from the British coal fields. The course of the Elbe roughly defines the four areas of supply, though in Berlin all four sources compete ; otherwise not much Ruhr or Silesian coal crosses it ; British coal supplies the area round its mouth ; on either side of the Upper Elbe lignite deposits are being rapidly consumed.

In consequence of the position of the western seam, its coal found no shipping or domestic market, and a large proportion of its total output had to be coked. High cost of working rendered the sale of coal alone unremunerative, and forced the mines to find a market for their by-products. From these necessities arose the Lorraine iron industry and the great dye works at Ludwigshafen and Mannheim,

indispensable to Ruhr coal as it was indispensable to them ; each member of the powerful group—often identified with the heavy industry of the continent—directly relied upon and caused the development of the other two.

The product of the eastern seam had no such reception. Had Silesian coal and ore been mutually adaptable, the difficulties of Silesia's isolation might have been overcome. But Silesian coal, in spite of a high gas content, is rendered unsuitable for coking by high acid content and low calorific power, while Silesian ore requires excessive quantities of coke.* Further, the ore deposits are deficient in quantity as well as quality ; in spite of increasing import of ore and increasing demand from the iron and tin mines, more coal was produced than the local market could take. These incompatibilities, combined with Silesia's distance from the ports and the old centres of industrial life, constituted the problem of Upper Silesia before the allied powers had reversed the decision of the present population of the province.

Though the two main seams have to face the main problem—high transport costs owing to their position—the setting in other respects is so dissimilar that the seams have little in common † ; there are no other conditions affecting the German coal industry as a whole. Since the partition, Silesian coal has had little importance for the German industry in general, and as the organisation of the Silesian works which has been exhaustively treated, ‡ only the attempts of the Ruhr mines to deal with the problem are considered here.

The Ruhr area, in consequence of its position, has always been threatened by chronic over-production ; although

* Because, although its iron content is no lower than that of Lorraine minette, the gangue, unlike that of minette, does not consist of limestone and must be removed before it enters the furnace. Imported ore (from Russia and other parts of Germany) accounted for eighteen per cent. of Silesia's total consumption in 1891, seventy-five per cent. in 1913.

† It is noteworthy that though the steel trust has certain indirect connections with Silesian iron works, there was never, even in the inflation period, any connection between Ruhr and Silesian coal concerns.

‡ By Storm, *Geschichte des Kohlenwirtschaf Deutschland*, 1913-26 (1926).

Germany was an expanding market for industrial products for forty years before the war, the mines' productive capacity was always in excess of that of the market. The essential problem was obscured before the war by the pure and mixed works conflict, which has now disappeared.* But the transport situation lay behind all the syndicate's activities from the first. Though the cost of rail transport was outside its control, the united Rhenish-Westphalian industry could before the war exert great influence, since one-third of the total volume and goods traffic on the German railways is coal. To secure preferential railway rates was in fact the syndicate's first effort and achievement; the 1877 association did little else. Still, since the effect of influence of this kind is necessarily small, the industry also aimed at controlling its means of transport by water; these it was able to bring under its control as soon as it had subordinated the coal trade. During the 90's the Kohlenkontor (the subsidiary organisation for South Germany and Switzerland) attained such complete control over Rhineland shipping that the Rhineland states, Prussia, Bavaria and Wurttemberg, acquired shares in other undertakings, fearing that the syndicate would achieve a Rhine shipping monopoly. At the same time the coal interests were financing the Dortmund-Ems canal and beginning to agitate for the Mittelland canal.

So far as the railways are concerned, there is no longer any possibility of action of this kind, now that the Reichsbahn, responsible to international authority, must secure a return on its capital. A clause in the Versailles

* By 1926 the only independent mines remaining were the Harpen Bergbau A.G. (a very sound undertaking financially and technically) with a syndicate quota of 7 per cent. the Essener Steinkohlenbergwerke A.G., (3½ per cent.), the Mathias Stinnes G. m. b. H., and several smaller mines which owe their independence to the special quality of their coal or a favourable transport position. The conflict was finally settled by the 1925 contract, under which for the first time the syndicate regulated output for self-consumption, making a distinction between "concern" mines and "mixed" works; the right of self-consumption is only granted to the latter, which must have an interest in an iron and steel works of at least 51 per cent. Thus of the total quota of 157 Mill. tons 22.4 per cent. was given to the pure mines, 21 per cent. to "concern" mines, 56.6 per cent. to the "mixed" works; the 1904 contract gave pure mines 82.2 per cent. and mixed works 17.8 per cent.

treaty required that freights for delivery of reparation coal must not exceed the lowest tariffs of the same nature imposed in Germany; this, in addition to the persuasions of the "consumer states," East Prussia and Bavaria, led to the introduction of the graded tariff (accompanied by the first unitary tariff for coal) contemplated before the war but never introduced. Its effect has been to raise the average length of rail transport* by reducing charges for distances over 350 km. This has injured the Ruhr, which sends three-quarters of its coal for distances under 350 km., reducing its area of supply by about 65 km.† The syndicate has continually agitated for re-adjustment without success; it hoped to benefit by the re-introduction of the special export tariffs in 1925 (amounting to about 25 per cent. reductions for 350 km., i.e. the distance from Dortmund to Hamburg), but could not guarantee a certain volume of traffic—which the Reichsbahn made a condition of the re-introduction—as its Hamburg consumers had in the interval arranged to receive their coal by water. Finally the syndicate was forced to realise the change in its position, when its persistent demands for a reduction of lading charges were rejected on the introduction of the new tariff in August, 1927, while the wishes of the finishing industry were granted.

Consequently it turned its attention to water transport. With the support of other industrial interests, it has forced upon the government canal constructions of doubtful value. Belief in the possibilities of canal transport dates from the enthusiasm of the 80's, which culminated in 1899 with the opening of the Dortmund-Ems canal, a project intended to give the Ruhr direct communication with the sea and make Emden the German Rotterdam.‡ It is claimed that the failure of this undertaking is no objection to the projects on which the industry now concentrates—the Hansa canal, which will connect the Ruhr with the northern ports.

* From 123 km. in 1913 to 146 in 1925.

† The 1914 area of supply, roughly a radius of 525 km. round Gelsenkirchen, would be reduced by the price increase alone to 365 km., whereas it actually was reduced to 300 km.

‡ The canal now carries only one million tons of coal per annum. Its disadvantages are the slowness of the route and number of locks; it passes through a land without industry.

Hamburg, Bremen and, perhaps, Lübeck, nor to the completion of the Mittelland canal whose object it is to connect the Ruhr with the Elbe and Berlin and so unite the Reich as an economic area, agrarian east with industrial west. Although the new canals constructed since 1913 have not brought any great increase in traffic, it is believed that the results will not be apparent until the new lines of communication are complete.

Yet the industry realises that the construction of new canals is really an antiquated method of dealing with the transport problem. It is true that Ruhr coal relies on water transport to a greater extent than it did before the war; in 1913 30 per cent. of the total volume of traffic was carried by water, in 1927 47 per cent. But though the amount carried by canals has increased from 1 million tons in 1913 to 13 million in 1927, it remains very small in proportion to the total traffic.* Canal transport is only rarely an alternative to the rail transport; conditions are so unsatisfactory that it is not used unless it involves a saving of at least 15 per cent. in freight charges, and then only for distances over 280 km.; combined rail and water transport has become wholly unprofitable since the war. No existing canal earns a return on its capital. Nor can new construction be supported in the interests of industry as a whole. So far as the Mittelland canal is concerned, it has less justification than ever now that Westphalian coal has displaced British coal in Berlin. The Reichsbahn is fully capable, owing to technical improvements, of dealing with the increase in goods traffic in the next few years; coal traffic, it is estimated, will be reduced by one-third by the development of coal treatment processes, the electrical power and gas transmission systems.†

Existing pressure on the market, therefore, cannot be relieved by any adjustment of the ordinary means of transport. The new canals, even if they do carry a greater volume of coal to the ports, will only intensify the struggle

* Teubert (*Institut für Konjunkturforschung*, 1928, Sonderheft 5) holds that this cannot exceed 1 per cent. per annum.

† Pirath, *Verkehrstechnische Woche*, 1927.

with English and Polish coal, new markets will not be created. The true solution lies, as is universally recognised, in further concentration on the by-products of coal, for the production of either synthetic fertilisers or synthetic fuel, both of which bring the coal, iron and steel concerns into competition—and later no doubt co-operation—with the I.G. Farben Industrie. In the hands of these two groups lies the future of the fuel economy of Europe; within a few years time no coal will be sold in the raw state. For that advance the monopolised coal market and the financial policy of the I.G. Farben Industrie will alone be responsible; but investment in these processes remains a matter for the individual concern or group of concerns, and has no significance except from the standpoint of present market policy. The Ruhr mines, when stabilisation showed them the limits of their market, tried to find some means of widening it which would be quickly effective and not dependent on the uncertainties of technical progress, since they could not attempt an adequate general reduction of output through a closing down scheme.

This means they found in a scheme for long distance transmission of gas from the Ruhr collieries, at first to Rheinland-Westphalia, and later to the whole Empire. The scheme is not to be classed with the other fuel economy activities, since it marks no technical advance (except in so far as it depended on the discovery of a process of rolling tubes in such a way that they bear high pressure) and no revolution in power supply. By the Ruhr coal interests it is regarded as a proof of the value of organisation which enables an industry to deal with its problems as a whole, and by its opponents—the municipal and private gas works—as the final effort of a distracted monopoly to deal with the excessive investment it has itself created; it is, at any rate, a radical attempt to deal with what has always been—and would have been, even without the monopolistic organisation—the Ruhr's central problem, for it amounts to the mines' creation of their own means of transport. The magnitude of the scheme, which will involve enormous capital outlay and considerable disturbances of economic interests, is a

striking proof of the industry's power to deal ambitiously with the problem—and its inability to face the real necessity—a comprehensive closing down scheme.*

* The gas transmission scheme has roused much opposition. The commonly made objection that it is an enterprise of a private character in a field generally reserved for public authorities is not necessarily valid since it does not mean that it will be unable to earn a profit on its capital since the municipal authorities do so and the difference in overhead costs is not so great; on the other hand, there is no reason to suppose that the rate of return will be much higher, for large-scale production is not accompanied by the same economies as it is in an electrical power supply system. The Ruhr concerns have only taken the initiative; the undertaking has been financed by an American loan of \$12 Mill. For the completion of the scheme a capital of 300-400 Mill. RM. will be required. By April, 1928, the company had acquired the tube transmission system of the Rheinisch-Westfälisches Elektrizitätswerke and under contracts with South Westphalia and Hanover had a guaranteed demand of 1 million cb.m. gas.

The scheme as presented by its supporters seems too good to be true. Its success depends entirely on the possibility of a great increase in the consumption of gas. They argue that the present low consumption of gas (in 1925 the consumption of gas per head in Germany only amounted to one-third of the English consumption) is due to the difficulty of disposing of coke, felt most acutely by the works situated at a distance from the iron and steel districts; large-scale output increases rather than diminishes the "Koksgasschere" since more coal is purchased at fixed prices and coke prices become more uncertain. Gas output must be increased without at the same time increasing coke output. This is possible if the present process of replacing the old type of furnace by the compound furnace is continued, for while the former consumes all its own gas or the greater part of it, the new type (at present responsible for about 13 per cent. of the Ruhr coke output) can be heated either by their own gas or by gas generated in special producers from inferior coal. This substitution will, at the same time, dispose of the difficulty of the marketing of inferior sorts of coal whose market is guaranteed by the syndicate. Thus the gas is already available; in 1925 the total gas output from gas works amounted to 3.2 milliard cb.m. with which is produced 4 million tons of coke; in the coke furnaces a quarter of the total German coal output produced 26.8 million tons of coke (23 million in Rheinland-Westphalia), and with it 10-11 milliard cb.m. gas (9 million in Rheinland-Westphalia); of the nine million about one-half is used to heat the coke furnaces, about half for the mines' other uses; only three hundred thousand of the nine million being used by the municipalities for long-distance transmission. That is to say, about 2½-4 milliard cb.m. is at present available for transmission if the furnaces used gas generated from inferior coal now unsold. Thus a great advance in fuel economy of advantage to all consumers would be accompanied by solution of the syndicate's marketing problem. The cost of producing cokery gas is lower than that of gas produced in the works and the company claims that it can sell gas at a price of 3.5 pfgs. per cb.m. including transmission costs, while the gas works' price is not usually lower than 7-8 pfg.

The scheme's opponents, like its supporters, produce tendentious calculations and prove too much. Two of their arguments, however, are convincing. First, so far as costs can be calculated, it appears that the difference between the calculated cost of transmitted cokery gas and the cost of gas works' gas is accounted for by the lower price which coke furnaces pay for their coal and that otherwise the price of cokery gas would be very little lower than prevailing gas prices, in which case increase of consumption would not be enough to justify the construction of the

Other industries, of course, do not possess the same degree of power. The lignite industry, whose significance first became apparent in the war and post-war period, encounters a similar problem, with the difference that its cost of working is extremely low. Its transport costs are higher than those of Ruhr coal, since lignite and lignite briquettes pay the same freight rates as coal for a lower calorific value; the consumer pays three and a half times as much for rough lignite, one and a half times as much for lignite briquettes, as for hard coal of equivalent calorific power carried for the same distance. Thus the extent of its market—at present never more than 100 km. by rail—depends on the extent to which low costs of working compensate for low

transmission lines. Second, the coal quality problem would not be wholly solved, since the gas generators can use slack, but not the close burning coal which represents 10 per cent. of Ruhr coal output.

Railways, municipalities, gas works, will all be affected by the scheme. If successful, it would reduce the volume of coal carried by the railways by about 5 million tons, possibly more. The memorandum's calculations of the possibility of saving of transport costs are necessarily vague since it depends on the volume of gas transmitted over certain distances. The transport of 1 kg. of coal for 400 km. (Ruhr to Berlin) costs 1.22 pf., the transmission of 1 cb.m. of gas—roughly equivalent—(assuming a volume of gas transmitted of 75,000 cb.m.; actually in a modern gas works 2.3 to 2.5 kg. of coal go to produce 1 cb.m. gas). Although no calculations for the entire scheme can be made on that basis, it is evident that the saving of transport charges will be considerable. The Reichsbahn instantly realised this and announced that it would charge an exorbitant fee, sufficient to ruin the scheme, for each crossing of the line by the transmission pipes, with an additional fee varying according to volume transmitted. Later they were persuaded to reduce the charge to one-quarter of its original sum and to remit the variable charge.

Gas works and municipalities assert in the same breath that the success of the scheme will entail their ruin and the establishment of a monopoly. The promoters have no object in refusing to co-operate with the existing works, and if they do co-operate, the gas supply will be as much as, and no more monopolised than, it is at present. If, on the other hand, they do not negotiate, but compete, they will only substitute a central for a local monopoly. The fear of monopoly is widespread and genuine: the Dessau gas works in 1927 went so far as to acquire a coal mine in order to be independent of the Ruhr company, and the municipalities of Frankfurt and Mannheim have actively opposed the projects of the South German gas transmission founded in imitation of the Ruhr company's example. It is quite unfounded, seeing that low prices are necessary to stimulate consumption and will be fixed under long-period contract, and that in any case the powers possessed by the state under the coal industry law are sufficient to guard against abuses of this kind. The danger is rather that the company will abuse its position by favouring the works in which the Rhenish-Westphalian concerns have interests, that municipalities will reduce rates to compete, and that the small domestic consumer will bear the cost.

calorific power and high transport costs. The weakness of the syndicates put collective action out of the question from the first; consumers were obliged to move to their fuel, and the transport problem therefore partly solved itself. At present a large part of the output of the three main areas, the uniform and concentrated Cologne seam, and the numerous scattered seams of Central Germany and the East Elbe district, is controlled by electrical power and chemical works and does not come on the market.* Exploitation of the seams has been responsible for the principal change in industrial location since the war—the emergence of Central Germany as an economic unity, comparatively self-contained and independent of the rest of the Reich to a greater extent than any other area, including every type of industry from the old skilled specialities like Apolda embroidery to the most modern fuel research experimental plant. Consequently proposals for reduction of lignite rates are frequently made, but receive little attention. They can be legitimately rejected on grounds of fuel economy, in view of the suitability of lignite as a raw material for the new chemical processes and its excessively rapid rate of exploitation.

Generally speaking, apart from exceptional cases like Ruhr coal, no combine can effect transport cost reductions, unless it is a trust with financial resources great enough to enable it to move its works. The steel trust's concentration of the export trade in the Thyssen works, and Krupp's removal to Essen, have already been mentioned as approaches to rationalisation. In paper a similar movement is noticeable,

* Ownership of Lignite Mines in % Output, 1928.

	Central Germany.		East Elbe.		Rheinland.	
	Briketts.	Coal.	Briketts.	Coal.	Briketts.	Coal.
Trade	47.5	11	84	46	50	32
Chemicals ..	33	42	—	—	10	—
Electrical ..	9.7	30	1.8	23.5	25	60
Iron and Ore ..	2.8	1.5	2.7	5.8	13	2
Glass	—	—	4	2	—	—
Potash	0.2	5.0	—	—	—	—

designed in this case to reduce transport costs of the raw material, not of the finished product. The industry has to weigh the advantages of cheap power against high cost of raw material. The greater number of works still remain in the areas with plentiful water supply, the mountain valleys of Upper Bavaria, the "Saxon Switzerland," and the Silesian Riesengebirge; though Saxony, which employs about one-quarter of the workers employed in the industry, produces only half its output with water power, on which the industry was absolutely dependent before the discovery of the cellulose process and the use of steam. Water power is still cheaper if available in sufficient quantities; in the Rhein-Main-Neckar area (after Saxony the largest producer) where the large scale modern undertakings are found, Mannheim's four great works use steam, but other works rely on the Main and Neckar tributaries. In this area timber shortage is acute*; the adjacent forests supply only 10 per cent. of its total requirements. In consequence, the larger firms which were affected most seriously began about twenty-five years ago to construct works on the Baltic coast, using English or Silesian coal and Scandinavian pyrites.† In the post-war period the movement gained in momentum, though its actual extent is difficult to estimate in the absence of statistical information. It has not proceeded on a large enough scale to merit the term rationalisation; it has been carried through by the larger firms as individual undertakings. It is, however, the spread of combination which has provided the necessary financial resources. Even with the assistance of financial amalgamation, the industry has been driven to rely on foreign capital to some extent; German financial conditions have prevented the industry from moving to its raw material as rapidly as it has done in North America.

* Black forest timber is of high quality and goes down the Rhine to the Dutch shipyards.

† The increasing pressure of transport costs is well illustrated by the behaviour of the Feldmühle A.G., the largest German concern, whose Odermünde works are reputed to be the best equipped in Europe: it began in 1885 in Liebau in Silesia, in 1893 moved to Cosel, in 1899 to Breslau, in 1920 to Scholwin near Stettin.

See note, p. 98.

(iii) *Working Capital*.—The greater number of concerns formed in the past few years owe their continued existence to the stringency of German financial conditions. Concerns arose in the inflation period for a different purpose, and after stabilisation either dissolved or amalgamated in those branches where the cost of working capital is relatively unimportant. In the branches where shortage of working capital remains a serious difficulty, the concerns remained.

The shortage has affected textiles most acutely. Capital costs in relation to selling prices are estimated to have been three times as high in 1925 as they were in 1913.* Great sections of the industry work entirely with borrowed capital. Of the fifteen to twenty leading concerns, none, with the exception of the linoleum, jute and hemp trusts, have any *raison d'être* other than the financial. Some, for instance, Hammersen, Blumenstein, and Stöhr of Leipzig, arose in the inflation period and have expanded since; others like Norddeutsche Kammgarn, and Kolbermoor, the South German textile concern, did not appear till the stabilisation period. In no case have these combinations been accompanied by vertical integration, control of raw material supply or expansion in the scale of production. Under the influence of the popular belief in the virtues of vertical integration which prevailed in the inflation period, one or two concerns attempted to make vertical connections, without any genuine motive and without success.† The purely financial significance of the movement is illustrated by the management of the Blumenstein concern, the largest group in the industry, which grew up from a small jute trading firm which made

* von Beckerath, *Die Handelspolitische Lage der Textilindustrie, in Schriften des Vereins für Sozialpolitik*, 1925.

† Stöhr of Leipzig, for instance, a large worsted spinning undertaking (90,000 spindles), which had acquired a number of spinning establishments since 1920, concluded an agreement in 1922 with a weaving concern, the Elberfelder Textilwerke A.G. (Ettag) and announced a policy of vertical integration towards the end of the inflation period, founding two companies, the Textil Vertikal A.G. and the Vertikal Streichgarn A.G., which were intended to begin with raw material and finish with retail trade. At the end of 1924 the attempt was abandoned, with the statement that the saving in turnover tax did not compensate for the increased working capital required, that "the private initiative of the merchant is lost in the vertical concern," and that consequently the companies would in future confine themselves to the manufacture and export of ready-made clothing.

profits in the war from the manufacture of jute substitutes, and now controls the greater part of the jute industry and between forty and fifty firms in other branches. The holding company, the Bank für Textilindustrie, does not manage any firm, nor are there any inter-connections between the firms, so that the bank can buy and sell controlling interests without disturbing the concern; it is an industrial administrative bank (for in 1926 it raised a loan in England for eleven of its companies) which like the Bank für Brauindustrie is limited to one sphere and has a closer control over its clients than an ordinary bank has.

That the concern has not spread very widely in the textile branches suggests that its effectiveness as an economiser of working capital is limited. According to a calculation of the Statistisches Reichsammt (*Wirtschaft und Statistik*, 3, 1928) 27.5 per cent. of the total nominal capital of textile companies is invested in concerns. But the share company is rare in many branches of the industry; at least one-third of its total capital is invested in limited liability partnerships (the G.m.b.H.) or private companies. Further, the official calculation includes artificial silk—100 per cent. "concerned." The percentage of the total capital invested in concerns in the textile industry proper cannot exceed 20 per cent.

The industry has, however, found another method of economising the use of working capital, the terms association or condition cartel, which in its negotiations with the trade usually succeeds in shortening the term of trade credit. This type of cartel, owing to its simplicity, has spread into every branch of the industry, even into those which remain otherwise unorganised. In its limited sphere it fulfils the industry's fundamental need, though what its real achievement has been in the past few years remains a matter for surmise. An interesting variation of this type of cartel, economising credit by decreasing the demand for it, the agreement not to make for stock, appeared in 1928 among the ready made clothing makers and the ladies' clothing manufacturers.

The cartel can also, of course only if it represents a large

industry, undertake negotiations in the capital market. The silk associations, in 1927, after fruitless attempts in the home market, succeeded in arranging a textile machine credit with an English group. The trade association of the engineering industry has given great impetus to the introduction of instalment purchase by obtaining special terms from credit institutions for its members.

The cartel can even, in exceptional circumstances, undertake the direct provision of capital, as it has done with great effect in the brick making industry. The industry is perpetually threatened by over-production, because new works can be easily opened, and the market is limited to a radius of 20-30 km. The processes at present in use subject the brickyard's output to seasonal variation, while their small size and financial weakness render them unable to carry stocks; financial weakness prevents further technical advance, that is, the introduction of artificial drying machines, which would rid the industry of its present seasonal character. The scale of production cannot grow larger, for increased output increases stock. The cartels, therefore, aim not merely at reducing the violent price fluctuations which result from these characteristics, but at relieving the credit shortage. In 1927 there were 108 selling agencies, of which a large but unknown number acted as price associations. Of the four selling agencies examined in 1928 by the Enquête Committee, three considered such banking activity to be their principal function, and were convinced that without it their members would have been ruined. To enable them to perform these functions the selling agencies take various legal forms unlike those of the ordinary local cartel; of the four examined, one is a consumers' co-operative society (*Genossenschaft*), two limited liability companies, and one a share company. Two were financially independent and did not rely on bank loans: one, the Chemnitz company, is managed by a Dresden building society, the subsidiary of a central credit institution. At first sight it may appear that by giving security to hundreds of small brickyards on the verge of bankruptcy the cartel hinders the progress of rationalisation, since if the smaller

works are wiped out, larger and more efficient works will take their place. The associations argue that in the special circumstances their function is economically justifiable, since the small extent of the market limits the unit of output; by providing the smaller firms with credit they enable them to introduce such technical improvements as are feasible for that scale of output. One manufacturer, an outsider of the Chemnitz association, using the most modern methods and working throughout the year, stated that if the cartel broke up, his methods could not be universally introduced, as once the smaller firms had gone bankrupt, no further investment in the industry could take place, so low is the average rate of return.

This cost element, unlike transport and overhead costs, can obviously be reduced by various forms of cartel activity, though here again the trust exhibits its superiority, by the mere fact of its size and capacity for reducing risk and costs all round.

II. EXTENSION AND REGULATION OF THE MARKET

(i) *The Home Market.*—The cartel's essential function is of course stabilisation, rather than extension, of the home market, but many producers' associations attempt to widen the market by facilitating marketing operations for their members at the same time as they regulate it. Even the preliminary operations which establish an output quota for each firm must be accompanied by some sort of estimate of the factors influencing its future expansion. Nothing could be more untrue than the accusation that the cartel tends to take demand for granted and adjust supply to it; its own existence depends on the success of its efforts to dispose of expanding output.

The producers' association can regulate and expand its market in several ways, short of suppressing the trade completely. In the case of the most obvious method, collective propaganda, the trust's activities do not differ from those of the ordinary concern, except in so far as its resources are larger and it can use them as the ordinary

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concern rarely can, as a substitute for an agreement on each pressure of foreign competition.* The use of ferro-concrete, hand, is hampered in its use of ordinary means numerous, and cannot advertise all its members' brands under one. The altogether uniform or else do not compete. If in a uniform may find itself driven to indefensible practices; but the syndicate, for instance, contracts to deliver special strong when ordered up to the limit of the firms' quota, but to amounts in excess of the quota are ordered, raises the price it lowers the prices of brands insufficiently ordered and is obliged to advertise them. For this reason the cartel does not usually undertake collective propaganda, unless as an accessory to a sales organisation which acts as a substitute for the firms' own selling departments rather than as a means of market control. The central sales organisation of the finishing branches are in general of this type; their primary function is not, as it is in the heavy industry, to act as a mechanism for the maintenance of the syndicate contract. In the branches which work to order, this type of organisation has made most progress. The engineering branches, which are best able to conduct the marketing of their own product, encounter a special difficulty; if the firms associated for the purpose are manufacturers of different types of machinery, as they frequently are, the difficulty is to find a staff which combines adequate technical knowledge with ability to sell and organise—a difficulty which three associations at least have found insuperable.† The cartel

* The I.G. Farben Industrie secured the home market for its Indanthren dyes by convincing public opinion that they were the only fadeless dyes on the market.

† Instances of successful central selling:

- (1) Deutsche Molkereimaschinen G.m.b.H. in Berlin, a company set up in October, 1927, by seven dairy machine firms for export to Russia.
- (2) Vereinigte Armaturen G.m.b.H. (Five firms.)
- (3) Benz-Daimler. (The firms are financially connected as well.)
- (4) Agricultural machinery association to protect export interests. (Formed 1926.)
- (5) Paper working machinery. Twelve firms use the same export organisation.
- (6) The Tiefdruck syndicate, directed by a representative of the industry's largest consumer, regulates prices and sales.

The greater number of sales central organisations exist in connection with specialisation agreements.

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works are wiped out manufactures for stock, and at the take their place. As a standardised product, like brick circumstances the combines credit functions with marketing the small ext

by providers which work to contract have evolved a to introd of the central sales agency in the form of the that agreement. The two central associations* of the Cheung branches which work entirely to contract, the iron wd ferro-concrete construction engineers, have developed systems in essence identical, with the object of correcting two defects in the preparation of contracts; one, the loss involved in preparation of rejected tenders (only 4 per cent. of the tenders prepared by the ferro-concrete builders are successful), the other, frequent insertions in invitation for tenders of conditions which would seriously affect the quality of the construction. The associations therefore have to attempt to reduce the numbers of contracts prepared and improve the method of drawing up contracts. This is accomplished by an agreement on the part of all the members to inform the central office of all the invitations to make tenders which they receive, and to state whether they are prepared to come to an agreement with other firms; if all consent, the central office invites them to meet and discuss the tender, in order to reach an agreement to leave the order to one firm. If an agreement is reached, the other firms receive a share of the profits on the order amounting to the cost of preparing contracts. But an agreement is seldom reached, since if one firm declares itself unwilling to come to an agreement, no conference is called and no pressure exercised. The iron builders succeed in reaching an agreement on only 20-25 per cent. of the number of orders discussed, the ferro-concrete in only 7 per cent. of the value of orders, though the percentage rises to 9 in times of industrial revival. Both have attempted to widen this very limited sphere of activity by introducing a system of distributing orders according to quota allotment, but at

* Deutsche Eisenbau Verband: 101 firms of 125-130, and the Nachrichtenstelle für Hoch und Tief-Eisenbetonbau: 51 members in 1926 and numerous outsiders.

present it is difficult enough to reach an agreement on each individual order, particularly in the case of ferro-concrete, when the order is usually large, outsiders numerous, and where estimates may differ by as much as 10 per cent. The iron builders are now strong enough to insist on a uniform type of contract and methods of cost calculation, but the ferro-concrete association, on the other hand, is not strong enough to refuse contracts containing clauses prejudicial to the quality of the building; they state in their evidence before the Enquête Ausschuss that public authorities always choose the cheapest tender even if it contains such clauses, while private undertakings do not. It is regrettable that neither association hopes for much advance in the future, since the principle and its execution are sound and approved by individual and municipal authorities as a guarantee of a higher standard.

The lift-construction industry has devised a more effective method of avoiding cross tendering. In this branch the necessity is even greater because preparation of tenders is more costly in proportion to the value of the order. The Verband deutscher Aufzugsfabrikanten has used a system of enquiry notification and allotment of order by quota since 1907*; it controls the greater number of firms in the

* This cartel can claim to have safeguarded technical methods without specialisation or standardisation, for in this branch the importance of skilled labour necessitates regularity of employment and safety demands a product of high quality, so price competition is particularly injurious, but cannot be avoided in the ordinary way, on account of the individual nature of each order. Quotas are allotted to each member: each firm informs the association of the orders it has received, and, if it does not hear from the association within three days that other firms have also received enquiries for that contract, considers itself "protected" for the order. If several firms notify the enquiry, the association allots it to the one whose orders fall shortest of its quota (though a firm which had previously supplied that customer is considered to have a prior claim). The firm selected is able to deliver at what price it likes, subject to the approval of the others who are obliged, if the customer negotiates with them, to make a higher tender. If one of the unprotected firms gets the order in spite of the higher rate, it is obliged to pay three per cent. of the proceeds into an "Undercutting Fund." The "protected" firm cannot make excessive charges because the other members will protest; to guard against the possibility of a false notification of prices to the association, a maximum price calculation is fixed with which the customer is familiar. The "protected" firm is still in danger of competition from outsiders, and if it finds their competition too trying can leave the order to one of its associates, otherwise it can make a reduction of a certain amount and if this does not suffice can make a

industry, though its outsiders include Otis, the American firm, the principal undercutter for large orders, and Stigler of Milan, and it cannot therefore exercise much influence in the value of contracts.

(ii) *Export.*—German industry in general appears to rely much less than formerly on cartel policy as an instrument for pushing export sales. The syndicates of the heavy industry, which maintained differential price levels before the war, continue to do so, with the vital difference that in many branches export prices are subject to control by international agreement. Many other branches now follow the practice, though it is less systemised in the finishing branches, since in their case the proportion of output taken by the two markets rarely permits of subsidising one at the expense of the other. But the effect of the growth of syndicate organisation in the finishing branches must be more than outweighed by the steel cartels ceasing to dump the "A products."

The coal, iron and steel syndicates certainly succeeded in gaining new export markets before the war and retaining their hold on them in the years after stabilisation, though at the cost of internal tension. The policy of maintaining two price scales, carrying the costs of loss on export on inland prices, has raised a conflict of interests in the coal and steel syndicates, in place of the former opposition between pure and mixed works.

The contested area of the coal syndicate, that is, the whole export market and all inland areas where other coal competes, has always been supplied with coal at prices below those prevailing in the uncontested, that is the monopolised area, usually at a loss. The wisdom of the arrangement as such has never been questioned, but the question as to the

further reduction, usually up to 10 per cent. of the price, at the association's expense. (A 1 per cent. levy is paid by all members on all orders to provide the fund, in addition to the special levies mentioned above.)

This system has been working since 1907, and is found agreeable by customers and not objectionable by outsiders. Its influence is difficult to estimate because the number of outsiders is not known; they account for only 30 per cent. of the industry's turnover, according to the association, for over 50 per cent. in the opinion of one of themselves.

exact extent to which profits in the monopolised area should compensate for losses in the contested area, agitated public opinion more violently in the years 1924-28. Under the 1925 contract, 15 per cent. of the output of 85 per cent. of the syndicate's members was allotted to the contested area, and members were required to sell in the contested area without compensation. Soon after the signature of the new contract, losses on the contested area became exceptionally severe in consequence of the British coal subsidy, and the members compelled to sell in the contested area insisted that the syndicate should compensate them for losses there incurred. Immediately after the re-introduction of the old system, the position of German coal, in the contested area was reversed by the British strike. For several months Ruhr coal provided 95 per cent. of Hamburg's total fuel supply (against 60 per cent. in 1925 and 40 per cent. in 1913) and prices in the competitive area reached the same level as in the monopolised. Thus the tension eased off for a time, not becoming acute again till the middle of 1927; during that year the "Umlage" (tonnage levies paid by all members to the syndicate for compensation to members incurring losses in the contested area) rose from 0.40 RM. in April to 1.25 in September; by April, 1928, they reached 2.20 RM. The total annual contribution at the September rate would amount to 130 Mill. RM.

AMOUNT SOLD IN CONTESTED AND UNCONTESTED AREAS.

April, 1927-March, 1928 (first year for which figures are available):

		Tons.	%
Contested area	.. ..	34,061,504	29.14
Uncontested	.. ..	48,110,616	41.16
		<hr/>	<hr/>
Total	.. ..	82,172,120	70.30
" Works " Consumption	.. ..	25,935,918	22.19
" Mines " Consumption	.. ..	8,775,232	7.51
		<hr/>	<hr/>
Total	.. ..	116,883,270	100.00
		<hr/>	<hr/>

The same situation arises in the steel cartels, though these do not compensate their members for losses in the export markets, but pay an average price to all members, an arrangement which arouses exactly the same conflict between the works which sell in the export market and those which do not. In their case the conflict of interests is hardly acute enough to cause the syndicate's dissolution (as in coal it might if syndicate membership were not compulsorily enforced).

So long as these industries cannot work out a rationalisation scheme under which deliveries to the export markets could be allotted to the most favourably placed works, the system of subsidising export is inevitable; but as such a scheme would involve complete amalgamation, the possibility of alteration is exceedingly remote.*

When the question of the value of combination to an exporting industry is under consideration, the heavy industry ought not to come into the foreground, since its position is peculiar. The industry whose need is greatest is the industry whose home market is not monopolised and which exports at least 20 per cent. of its output. Of such industries engineering has gone farthest in centralisation of sales for export, simply because (as explained in the previous section) central selling in this industry offers special advantages. Its East European and Russian markets can be suitably developed by collective action, and some branches have set up special organisations for the purpose. The textile branches, on the other hand, have not evolved a special mechanism, relying on the high quality of the product (as for instance, velvet) or—more usually—on under-cutting by means of cheap labour and home work.

Paper alone of the finishing industries seems to have succeeded in using the cartel as a means of widening its market, not in order to maintain a high level in the inland market but to escape from the low level of prices prevailing there.

* Cf. p. 34.

Paper output and export (association figures) :

		Output. Tons.	Export. Tons.	(2) in % of (1).
1913	..	1,611,000	209,831	13
1920	..	1,108,000	—	—
1921	..	1,212,000	—	—
1922	..	1,582,000	—	—
1923	..	1,185,000	455,793	38
1924	..	1,377,000	427,365	31
1925	..	1,692,000	333,290	20
1926	..	1,668,000	372,071	22
1927	..	2,007,424	344,845	17

The greatest difficulties in widening the market are encountered by these very branches whose need is greatest. Five small industries stand in a class by themselves: clocks, exporting 80 per cent. of their total output, musical instruments and toys 75 per cent., pottery and glass 50 per cent., leather over 20 per cent. This group, insignificant in size in the German industrial body, accounts for 10 per cent. of the total value of German exports; these small specialities are as representative of German industry as coal or dyes (and as interesting from the standpoint of the reparation transfer problem); Germany is the world's largest exporter of leather, leather goods, glass, pottery, musical instruments and toys; in clocks she comes a bad second to Switzerland, in shoes third.

In every branch, her comparative international position has weakened since 1913. Only one industry, clock making, can show an absolute increase in the volume of its export trade. Each of the others has lost its markets for certain special causes. The great decline in the export of leather is due to the loss of the European markets, particularly France, Russia and the north. The 50 per cent. decline in the export of shoes is due to the competition of the great Czech firm, Bata of Zlin. Export of musical instruments has been severely affected by the British McKenna duty; not merely has the English market been lost, but the whole export organisation formed by the British trade acting as

intermediaries has been destroyed. The imposition of the American import duty and the growth of a British toy industry cut off the toy markets. Pottery can also point to a British duty as the cause of its losses. Thus in most cases the contraction of the market is due to circumstances over which the industry has no control; only leather and shoe making can be held responsible for their own weakness.

The cartel in other branches has shown itself capable of adjustment to many purposes, but no other branch has had to face loss of export markets on this scale. Other industries owe their characteristic forms—engineering, the rationalisation cartel, paper, the vertically integrated concern—to their technical character, or to the pressure of a single cost element—over-head costs in cement, working capital in textiles. In this group neither technical or financial conditions have given a direction to combination. Their technical conditions generally speaking favour the large undertaking—large in relation to the size of the whole industry, not as compared, of course, with the typical heavy industry undertaking—with the exception of toys and musical instruments, but in no member of the group do the technical processes permit of rationalisation by cartel agreement. Financial stringency has not stimulated concern formation on the same scale as in other branches of the finishing industry: in glass because the principal undertakings were controlled by foreign capital before the war, in porcelain because they were already controlled by the banks, in toys, clocks and musical instruments because family businesses prevail. The remaining form of organisation, the price cartel, is usually out of the question because minimum prices can usually be enforced only in the relatively unimportant home market. Consequently these industries are confronted with the difficult task of advancing from no organisation at all to the most advanced and complex, the central sales syndicate combined with international price regulation.

None have so far advanced beyond attempts in this direction, for combination is in all cases impeded by the

industries' geographical dispersion. Leather, the most widely scattered of all,* suffers from chronic depression; its home market is unprotected; and it is completely unorganised. Where the industry is locally concentrated combination is easier. Clock making, the most closely concentrated, being confined to the Black Forest and Freiburg in Silesia, is comparatively highly organised, though its progress is of very recent date. It treated organisation rather casually, as it enjoyed unbroken prosperity until international competition intensified at the end of 1926, when the three great Swiss part-making works founded the Rohwerke A.G., a holding company to take over the management of their works with the object of restriction of output, standardisation and specialisation; at the same time the French import duty was raised. Under these incentives the German industry showed itself capable of rapid adjustment; in the course of 1927-28 it formed two concerns including all the important firms of the industry and price conventions covering all types of watches and clocks.

Between these two extremes, highly organised clocks and unorganised leather, come the glass and porcelain branches, dominated by a few large concerns and partially successful cartels. The mirror glass industry manufacturers, controlled by French and Belgian capital, have been members of the European cartel since the pre-war period. The plate glass cartel controls the home market but so far has no international connections. Hollow glass has advanced no farther than weak local price associations.† The porcelain cartel, remarkable for the excellence of its statistical service, is negotiating for agreements with the Czech industry, but

* The location of most modern tanneries was determined by their predecessors, the handworkers—"hides must go to tan"—says a German proverb. They are therefore found near forests and clear water in two main belts—one running down the Rhine and Lower Main, and the other beginning in Silesia, running along the Sudetes, arriving in Saxony, spreading over the Thuringian forest and Harz and ending in the Weser hills. The leather industry of Schleswig Holstein (of which Neumünster is the centre) has no such industry; its tan comes to the North German ports from Argentina. Nor are the makers of leather goods more locally concentrated; Pirmasens in the Palatinate employs 14,500 workers in shoe making. Worms and Offenbach are devoted to saddlery, but the industry is to be found in every part of the Empire.

† Producers first formed a price cartel at the beginning of 1931.

is hindered by its inability to regulate output by quota allotment, an indispensable preliminary. Export associations in the toy making industry*—previously considered utterly impossible—were formed in the years 1927-29, but the musical instrument industry, widely scattered and highly skilled, has so far achieved no export organisation, with the exception of the mouth organ branch, in which the three large firms amalgamated in 1927 in order to unify their selling organisation.

Certain textile branches of the same general character as these branches display the same inability to combine for export. With the exception of the well organised velvet branches, none of the important speciality exporter branches have achieved any organisation at all, in spite of a high degree of local concentration.†

The failure of these branches serves to throw the success of the heavy industry into more striking relief, and shows that the effectiveness of the cartel as an export promoting agency depends on its power in the home market.

B. IN NEW INDUSTRIES

Is it possible to generalise, from the experience of these branches, about the part which industrial combination is likely to play in the typical new industry, using chemical processes and electrical power, requiring large units of capital output and investment, long periods of gestation and

* Locally concentrated in Nürnberg (mechanical toys) and Sonneberg (dolls) but dispersed in hundreds of remote tranquil villages in Thuringia and Bavaria.

† e.g. The cotton waste industry of Upper Lusatia, an industry employing about 16,000 workers, which supplied Central Europe with its bedding before the war and has now lost most of its export markets, is wholly unorganised. The hosiery industry is organised in condition cartels; in one of its specialised areas, Apolda, about 200 large and medium sized undertakings purchase their raw material and sell individually, though both the manufacturer and the trade are combined. The glove industry (exporting ninety per cent. of its total output) though closely concentrated round Chemnitz, is practically unorganised, as also are the "Barmen goods" and Vögtland embroidery industries, which have to face permanent loss of markets. The Vögtland industry employed 90,000 workers and exported eleven per cent. of the total value of all cotton goods in the pre-war period.

commercial experiment—the staple industries of the future? If it were, it would be possible to answer the vital question as to whether the capitalism of the future will be characterised by stable market conditions. So far every type of industry—coal, iron and steel, and cement with high fixed costs and contracting markets, paper, with high fixed costs and alternative markets, lignite with low overheads and expanding markets, brickyards with low overheads, seasonal production and limited local market, textiles with credit its critical cost element, engineering with its standardised and specialised product, the export group with scattered location, skilled workers and reliance on the export market—has shown itself capable of adapting the cartel or trust to its own needs. But none of these industries really resembles the typical new industry. Taking as representative, aluminium, artificial silk and synthetic nitrates, which combine an extremely high proportion of overheads with an expanding market, the differences are too great to permit of comparison. One mistake, however, can be avoided: it must not be supposed that the problem of combination is different in kind, simply on account of the size of the firm and the prevalence of financial inter-connection.

The new certainly differ from the older industries in that price control in these branches means control of the international market, since the home market in all these industries in every European country is dominated by one or two large concerns or groups which have attained monopolistic power by natural means of expansion, not by absorption of smaller firms. In these branches the small unit of production cannot exist, for technical reasons. The production of aluminium on an economic scale requires water-power generated electrical plant, and the possibilities of expansion are, therefore, rigidly limited; German emergency works using steam generated power had to be closed down immediately after the war, or taken over by the state. No water powers cheap enough and large enough to permit aluminium production are available in the United States, except on the Pacific Coast, where they cannot be utilised owing to their distances from bauxite supplies. Nitrate production also necessitates large

scale power consumption (though cheap fuel can be used instead of water power*) for the manufacture of hydrogen, but in the opinion of the industry, even if a small plant should buy its hydrogen, it could not work economically. In artificial silk, technical progress has had the unusual result of reducing the economic minimum; in 1927 an output as low as three or four tons of silk per day, was considered practicable, as it was not in 1924 and 1925; still, the decline only affects the minimum, not the desirable scale of output, which seems to be increasing.

As a result of their naturally monopolistic position, the large firms in these industries have not found it necessary to attract capital to their branch by distributing profits, and expansion has been financed by profit accumulation. The policy of the I.G. Farben Industrie, controlling 90 per cent. of the German nitrate output, is described later.† Half the world output of aluminium, and more than half the world output of artificial silk, is controlled by companies which have carried the same policy to still greater lengths.‡ Naturally, investment of profits has not been confined to the home industry: the leading firms have set up subsidiaries in other countries, and in other continents, controlled by holding companies, in co-operation with other firms; in artificial silk every company has now been drawn into a network of alliances, interlocking directorates, and exchanges of shares, connecting it with one of the two great complexes. But financial inter-connection has not as yet led to market control.

Nor has market control until recently appeared a necessity. The three industries have had no difficulty in disposing of output increasing at the rate of 50 per cent. over periods of three years.§ In 1928, however, a check was

* Senate Document 67, 1924.

† Chapter VI.

‡ The Aluminium Company of America increased its capital from \$7 million in 1907 to \$110 million in 1921 without any addition to capital by stockholders. Courtaulds in 1921 controlled only two spinning mills at Coventry and seven silk weaving mills; the works subsequently constructed in Ontario, Calais, Roanoke (U.S.A.), Wolverhampton, Cologne, were not accompanied by a capital issue. The chief German group, Glanzstoff-Bemberg, issued no new capital till 1927.

§ See note, p. 99.

noticeable : prices in all three branches fell considerably, and leaders of the industries began to speak of over-production. Often before similar warnings had been given and disregarded, because the industries were obviously working on very large margins of profit, but at this point the word was used in its exact sense to mean that cost reductions were not practicable on a scale sufficient to compensate for the price fall bound to follow on increasing production. The large size of the concern, and the small number of producers, give the leaders of these industries a point of vantage from which they may view the world industry as a whole ; the length of time which must elapse between the date when construction of plant is planned and the date when it is ready to produce, permit, of very accurate forecast of the future supply. It is interesting to observe that in consequence these industries differ from the old in methods of thought as much as they do in technique and structure ; the leaders, who as individuals exercise far greater influence than in other branches, invert the usual order in estimating demand, taking the increased output as given and considering the price fall necessary to take it off.* Estimates of supply three or four years ahead can be made quite accurately, but the effect on demand is more difficult to calculate, since in each case it depends on incalculable factors—for aluminium, on the aeroplane and automobile industry, for artificial silk on the whole textile market, for nitrates, on the state of agriculture. The percentage price reduction necessary to take off a given percentage increase in output may be either greater, with the same percentage increase on a larger output, if the limit of consumption is being approached as in German nitrates, or less, if new uses are being found as in aluminium. But in every case, stability of the price level influences demand more than the level of prices : the greater part of the output of aluminium, artificial silk, synthetic nitrates, is consumed by industries which cannot, once the new raw material has

* Marshall, *Principles*, 457, note. "Economists follow the practice of business life in inverting this order with regard to demand. That is, they consider the increase in sales that will follow from a given reduction in price, more frequently than the diminution of prices which will be required to effect a given increase in sales."

been substituted for the old, return to the old if the price of the new rises; hence, price reductions will not be accompanied by change in demand if they are likely to be temporary and spasmodic. Price control is as necessary in the interests of the consumer as it is in the interests of the producers.

Producers have, by reason of the character of demand, much greater power in fixing prices than in the older industries. What price controlling organisations there have been in each branch have shown an amazing degree of effectiveness. At the formation of the international aluminium cartel in 1906, prices rose from £100 a ton to nearly £200; and after its dissolution in 1909 again fell to £55 a ton. The European cartel, formed in 1926, has on the other hand shown itself prepared to make large cuts in order to compete systematically with the American trust. The German nitrates syndicate and Imperial Chemicals have pursued the same policy of steady reduction of nitrate prices, but in both countries the price level remains well above the level to which it could fall in the absence of the cartel: the I.G. Dyes maintains prices high enough to allow the cyanamide works to continue, Imperial Chemicals subsidises the gas works by selling its sulphate of ammonia at a price far above the level at which it could sell at a satisfactory profit. The German viscose convention succeeded in raising and stabilising prices in the German market for a period of two years, at the end of which it broke up under pressure of exchange dumping by the Italian company.

But at present no adequate market control exists in two of the three industries. The American aluminium trust and the European cartel, each controlling half the world output, are on the verge of a violent struggle. In the world artificial silk market, although the rivalry between acetate and viscose silk is becoming serious, the European viscose producers have so far failed to come to an agreement.

Yet this state of affairs cannot last. Even with their immense capital resources, the groups cannot face a price cutting struggle. They will be obliged to follow the example of the nitrate producers (an agreement was reached between the state subsidised Chilean producers and the British and

German trusts in June, 1929). But there is no reason to suppose that these agreements will be anything but temporary, so long as technical changes of a fundamental character are likely to occur. The financial and technical structure of the new industries could give rise to price fluctuations far more violent than those of the past.

Assuming, however, that these industries reach agreements to reserve markets and control prices, are there any special dangers attached to the combination movement? First, the product may not come into use as quickly as if prices were lower (as they would be under competitive conditions). It is an undoubted fact that the use of aluminium in the American automobile industry has been restricted by the policy of the trust, not only as a result of its price level, but also by reason of various competitive devices; in the opinion of Mr. R. J. Anderson, "producers could figure on a 100 per cent. increase in consumption with aluminium at 20 cents per lb. . . . with aluminium at 15 cents. a lb. this would easily absorb 2,000 mill. lbs. per annum."* But the trust has constructed new works at Arvida (Canada) that will go some way towards bringing output up to that level; it has followed the usual practice of financing expansion from profits. There is no reason to suppose that most rapid introduction of a new product is economically the best course; assuming that stability of general economic conditions is desirable, expansion through investment of profits resulting from high prices is more likely to ensure it than low prices, no expansion of the works (since small units of investment are impossible), or else expansion through speculative flotations and recurring shortage of supplies. Even if its stabilising function does not justify the price-fixing association, there is no real alternative; once the method of expansion has necessitated financial interlocking, competition must simply amount to price-cutting between groups. Nor has the stock argument against trusts—that they will check innovation and initiative—any more validity in this field. Monopoly in the home market has been the very soil on which the industries have

* *Representative Industries in the United States, 1929, p. 70.*

grown up. It is the small artificial silk works, the new European nitrate works, that have utilised the experience of the dominating firms. In none of these three have the technical processes reached a final form, and the cartel could not act as a preserver of the present technical standards, but only as a means of stabilising the inevitable price reductions.

NOTE I.

CHANGE IN LOCATION OF PAPER

In addition to the Feldmühle works mentioned in Chapter V, other large concerns of the Rhein-Main-Neckar area have moved partially to the East: Waldhof (capital 27.5 Mill. RM.) has acquired works in Tilsit and Ragnitz (E. Prussia) and Estonia since the war, Zellstoff Aschaffenburg in Memel: the Köslin Works of the English concern, Combined Pulp and Paper Mills Ltd., are another instance of the movement. Many independent works (Ostdeutsche Papier und Zellstoffwerke, A.G. Kunnersdorf (3.7) and the Stettin works of Rütgerswerke, the Central German chemical concern, Koholyt works at Königsberg (Inveresk concern), Natron Zellstoff und Papierfabriken A.G. (3.5 Mill RM.) with works in Altdamm, Arnstadt, Brachelen, Riebus), have been constructed in recent years, in and about Stettin (which supplies Berlin with its newspaper by way of the Hohenzollern canal).

It is difficult to estimate the extent of the movement; there are no recent statistics to illustrate it, because the 1925 census did not use the same classification as that of 1907. The census shows that Saxony is still the most important area, employing one-fifth of the total number of workers and using one-quarter of the total power of the Industry. The paper trade association figures exhibit the increased production of the Eastern states, Pomerania and East and West Prussia, but there are no figures later than 1922.

THE ACHIEVEMENT OF THE COMBINES 99

PAPER PRODUCTION OF THE PROVINCES.
Tons. (Association figures.)

	1912.	1922.
Prussia :		
Rheinland	201,606	175,920
Silesia	200,932	104,432
Saxony	106,294	89,137
Westphalia	60,446	58,259
Pomerania	45,875	89,582
Hanover	38,137	37,862
Brandenburg	37,524	25,107
Schleswig Holstein	27,220	29,831
Hesse Nassau	11,763	13,496
E. and W. Prussia	3,339	9,118
Total—Prussia	733,126	692,744
Saxony	422,793	425,204
Bavaria	156,121	167,853
Baden	106,805	127,001
Wurtemberg	52,342	63,093
Hesse	36,015	15,677
Alsace Lorraine	18,296	—
Small states, Central Germany	67,016	73,161
.. .. Northern Germany	18,728	17,120
Total	1,611,242	1,581,853

NOTE II.

WORLD OUTPUT ALUMINIUM
(R. J. Anderson's Estimate)
1,000 tons

1924	170
1925	183
1926	193
1927	204
1928	250
1929	320
1930	400



COMBINES IN GERMANY

WORLD OUTPUT ARTIFICIAL SILK
(C.E.I. and Arzet's Estimates)

					Mill. Kgs.
1922	..	..	..	..	35
1923	..	..	..	..	47
1924	..	..	..	..	64
1925	..	..	..	..	85
1926	..	..	..	..	99
1927	..	..	..	..	150
1928	..	..	..	..	160

WORLD OUTPUT

1,000 tons pure Nitrogen by Synthetic processes
other than by product

Waller's Estimates

1924-25	..	..	..	450
1925-26	..	..	..	583
1926-27	..	..	..	734
1927-28	..	..	..	900

CHAPTER VI

THE EFFECT OF THE COMBINATION MOVEMENT ON GENERAL INDUSTRIAL CONDITIONS

It is as easy to exaggerate the significance of rationalisation and the extent of combination as it is to generalise about their effects. The cartel's tendency to raise prices, the trust's tendency to self-finance, were obvious from the beginning of the movement in the 90's, and their implications had been discussed to the full extent of the limits imposed by theoretical analysis on static assumptions, and also from the shifting standpoint of various brands of Marxian theory,* before their effects had been at all clearly felt. Conjecture as to the effect of universal combination was prevalent long before many branches had shown any sign of combining; it continues to dwell on the fundamental changes for which the movement should be responsible without pointing to its definite manifestations. Here these tendencies are only considered as they have acted under post-stabilisation conditions, as contrasted with the pre-war period, and in so far as their operation can be actually observed.

I. CARTELS AND THE PRICE LEVEL

Rationalisation is sometimes regarded as a general industrial policy, even a final type of organisation, an alternative either to the present order or to socialisation. Actually it can be nothing more than a method of increasing the profit-earning capacity of certain industries in a certain

* See Chapter VIII.

situation, entirely consistent with the aim of capitalism, if not with its usual methods, and cannot be condemned if it fails, judged by the standard of distribution. The rationalisation and combination movements have certainly done nothing to produce the three conditions on which alone, according to Dr. Moritz Bonn,* capitalism is tolerable—high wages, low prices and widely diffused stock ownership, which German capitalism, as compared with the British and American varieties, is farthest from fulfilling. Combination even appears to have intensified the natural tendency of German capitalism to work in the opposite direction. So far as wages are concerned, no generalisation is possible: neither the direct effect—wage rates or level of employment before and after trustification—or the indirect—the employer's greater bargaining power and the contribution to general industrial recovery—can be estimated and compared. The fact of further concentration of stock ownership cannot be denied, originating in the circumstances of the banking system's development, intensified in recent years by the effect of Germany's peculiar financial conditions, rather than by trust policy. But Dr. Bonn's further accusation, that the German capitalist is obsessed by the medieval conception of a just price, carries no conviction. The only price doctrine which can be detected as influencing the combination movement in Germany, as contrasted with the United States, is the belief that an industrial undertaking ought to earn a normal rate of profit. Study of the combination movement in almost every industry suggests that a point comes in its history when the incentive to maintain profits at their previous level is strong enough to outweigh the factors which previously hindered combination. The date at which the point is reached depends on the structure of the industry; the capital intensive industries reached it first. Plans for re-organisation were made for the chemical industry in 1904, and for the steel industry in 1910, which would have undoubtedly increased their profits at the time, yet these plans were not accepted till the industries were faced with a permanent reduction of profits in 1925-26. Numerous

* *Das Schicksal des deutschen Kapitalismus*, 1926.

cartels can tell the same story—plans made in depression and abandoned when revival set in. The condition of the new industries proves the same point—that the capitalist is satisfied with a lower rate of return than could be achieved : the viscose silk manufacturers did not make use of processes for the recovery of by-products until the end of 1928, when intensified competition drove them to this hitherto neglected method of reducing costs. There are no instances of aggressive monopolising tendencies working from the beginning of an industry (such as abound in the United States), as there would be if the principle inspiring the capitalist were the extortion of the highest level possible under any circumstances. Nor are there many instances of resistance to closer concentration, once the decline of profits appears inevitable, as there are in Great Britain. Unless the industrialist conceived of the rate of return as conforming to a standard level, reductions in the rate would not act decisively. But even if this belief were more than a hovering prejudice, it is not identical with the medieval belief in a just price, and has far more justification, since the validity of the conception was for a long time supported by economic theory.

In consequence of this belief the industrialist's attitude to price control runs on lines contrary to the principle of the theory which analysed nineteenth century capitalism, though not to the principles of current German theory. Both the German industrialist and economist tend to regard industrial organisations as factors with which economic forces have to deal, rather than as themselves being the product of economic forces : the combine takes over the risk-bearing function from the capital and commodity markets, thus taking over at the same time their regulating function and becoming a self-governing entity, which, far from merely fixing prices and striving to counteract forces already acting on the market, controls the working of the forces themselves. Therefore the view implicitly held is that prices should in new industries bear the cost of expansion and in old industries the cost of closing down, a doctrine incompatible with the type of economic theory which analyses capitalism as a

system regulated by laws operating in the market. But since this type of theory labours under the disadvantage of ignoring the fact that all industries are new or old, it can put forward no real objection to the administrative theory of price policy, since the cost of expansion or closing down is borne by the public and not by the individual entrepreneur, whether it is carried on prices or not. So far as expansion is concerned, the principle is commendable, when the capital market is in an abnormal state, and if the industries investing profits are of the modern chemical and electrical process type, which can judge their own earning capacity at least as well as the capital market. Nor can the policy be condemned outright in the case of closing down: it is impossible to estimate the total loss to the community involved in a destructive competitive struggle, a scheme for price control which maintains plant below the general level of efficiency, and a similar scheme which compensates the works closing down, unless the scale and location of the interest affected would dislocate the economic system seriously, in which case the third method is undoubtedly preferable. That it can be consistently and successfully applied is proved by the example of the nitrates syndicate: the dyes trust which controls the syndicate's output has lowered prices gradually enough to enable the cyanamide works, whose costs are so much higher than those of the trust that competitive conditions would instantly extinguish them, to continue producing while gradually closing down. There is, however, no guarantee that the principle will not be abused: the plate-glass cartel, the so-called Bonner Verein, to which both the modern works and the mouth-blowers belonged, pursued exactly the opposite policy, maintaining prices at a high and rigidly fixed level until the former had re-equipped their plant, then reducing prices suddenly and ruining the antiquated works.

Prices are, of course, raised if this policy is pursued, exactly as they are if the cartel or trust pursues a policy of market exploitation and distributes the profit to shareholders. Such policy can only be condemned on the same ground which supports the "administrative" view of price

control, the desirability of maintaining a normal rate of profit : unless the normal rate is considered a legitimate conception, there can be no test of what constitutes exorbitant price policy, as distinct from the "administrative." The policy of raising prices to the highest level possible will probably break up the cartel, and stock will be thrown upon the market and prices will fall below costs, if costs include any rate of profit at all ; while the "administrative" policy will tend to stabilise profits over long periods. From the consumers' standpoint there can be no standard by which to judge the relative advantages of the two, unless the consumers purchase the commodity controlled as a raw material, in which case they invariably prefer stable to fluctuating costs since they have their own normal rate of profit in view.* With one or two temporary exceptions† no important cartel has in recent years followed a policy of market exploitation.

The limit of both policies is set by the possibility of under-selling by cartel members, a check which operates quite indiscriminately, and not, as is sometimes suggested, in cases of exorbitant policy only. In recent years this check has been much less frequently exercised : the cartel has in the post-stabilisation period attained firmer internal discipline over its members. In the first ten years of their existence, the cartels of the heavy industry were never free from this threat of dissolution, but since the number of members declined and outsiders have been absorbed in the great concerns, under-selling has ceased to be a serious menace. In its greater effectiveness in controlling the market, due to the growth of trusts, lies the principal change of the post-war period in cartel organisation : the greater number of cartels, their wider functions and new spheres of activity are less significant than this greater efficiency in performing its essential function. The change is, of course, most noticeable in the sphere of the heavy industry ; in other branches the weakening influence of the cartel decree

* Cf. especially the evidence of consumers in various branches of the engineering industry, before the Enquête Ausschuss.

† These are the München sewing cotton syndicate, the newspaper syndicate, and possibly also the cloth convention.

has partly—certainly not wholly—counteracted the tendencies working for stronger organisation. Greater security is partly due to more stable market conditions. Until the currency was stabilised, all markets were expanding rapidly and market control was superfluous : the cartels which kept on anything but a merely formal existence, occupied themselves with calculating prices in foreign currency. After stabilisation it was urgently necessary to adjust capacity to the suddenly restricted market. The pre-war cartels had to be re-formed under conditions of immense difficulty and many branches were still feeling their way when the 1925 crisis broke out, severely testing the power of those cartels which had already begun to fix prices. Since that time, business conditions have steadily improved, with occasional mild set-backs ; so far a situation of the severity of the 1908 crisis and depression which broke up even the most powerful pre-war cartels has not been encountered.*

But developments of the cartel system itself have also contributed to its greater stability. Once an industry takes the first step in the process of taking over from the market its risk-bearing function by forming a price association, it is almost invariably led on to the second—the sales organisation : this development has been noticeable principally in the finishing branches in the last two years. In the heavy industries the struggle with the trade began in the 90's, and long before the war was believed to be a thing of the past. During the inflation period, the trade suddenly became powerful enough to acquire industrial concerns, but the balance was restored by stabilisation ; coal, iron and steel cartels immediately resumed the struggle, ending in complete subordination of the trade in coal, still continuing in iron and steel. (Concern formation on a large scale has the same effect on the trade, even if there is no central sales organisation : 90 per cent. of the dyes trusts products are sold direct to the consumer.) In many other branches the same struggle is in progress : in several the syndicate

* The 1930 crisis, though it dissolved the International Steel Pact, left the internal cartels of the heavy industry fairly intact ; until the end of the year cartel prices were maintained.

and concern sales organisations compete with each other (with disastrous effect in lignite), in others (particularly the engineering industry) the advantage of combined or individual selling is still matter for dispute, in one or two (for instance grain milling) successful concerns sales organisation has even impeded cartel formation.

Its exercise of the distributive function is of course the cartel system's chief surface for attack. While it is true that certain industries can better undertake the sale of their own products, in others the syndicate sales organisation undoubtedly works more wastefully than an independent wholesale trade; the capital resources of the heavy industry give it bargaining power out of proportion to its efficiency as a trading organisation. To the argument of the opponents of the cartel system, that while in industry the extinction of the small firm seems necessary, even desirable on grounds of technical efficiency, in trade the smaller firm is not necessarily the less efficient, it can only be replied that recent German experience has proved that once the process has begun the remedies are worse than the disease. The trade can either concentrate itself in a few hands, and monopolise, a course which has strangled the rationalisation of the E. Elbe and Central German lignite markets, or it can form a cartel itself, which will be unlikely to attain any control of the market owing to the great number of its members, without making use of the discriminating rebate and other injurious methods of enforcing discipline. Once the object of the combine movement is realised—the transference of the risk bearing function—no alternative to the suppression of the trade can be suggested; it is a corollary of cartel policy, just as incursion on the sphere of the banks is a corollary of trust financial policy. The two together alter the outline of the pre-war analysis of the combination movement, which treated the cartel as representing industry's bargaining power against that of the trade, and the financial combine as representing industry's bargaining power in the capital market, not as having the supersession of both markets as the ultimate aim of combination.

Once the functions of the trade have been taken over, the industry can conduct its own export policy. The great syndicates of the heavy industry, which maintained differential price levels before the war, continue to do so, with the difference that in many branches export prices are subject to control by international agreement. Almost every branch of industry now follows this practice, though in the finishing branches it is less systematised, since in their case the proportion of output taken by the two markets rarely permits of subsidising the export market by an artificially high level in the home market; the textile branches rely almost entirely on one or the other, the "export group" on the export market. Paper is perhaps the only finishing branch to which the differential level is an advantage. German industry as a whole now appears to rely much less on cartel policy as an instrument for pushing export sales, the growth of syndicate organisation in the finishing branches being more than counteracted by the steel cartels ceasing to dump the so-called A products.* But the differential level has now taken the place of the previous opposition between pure and mixed works as the principal cause of tension in the heavy industry syndicates. In coal, the conflict of interests arises because the tonnage levy compensating for the losses of the exporting concerns is paid by all mines in the Ruhr area, to the detriment of the non-exporters, in iron and steel, because the syndicate pays an average price to all works, whether exporters or not. So far the efforts of the non-exporters to influence the syndicate to export less, or reduce the price span, have not been successful, but they exert sufficient pressure to compel revision of the contracts when they fall due for renewal, though not to break up the syndicate altogether, unless the present check turns into general depression.

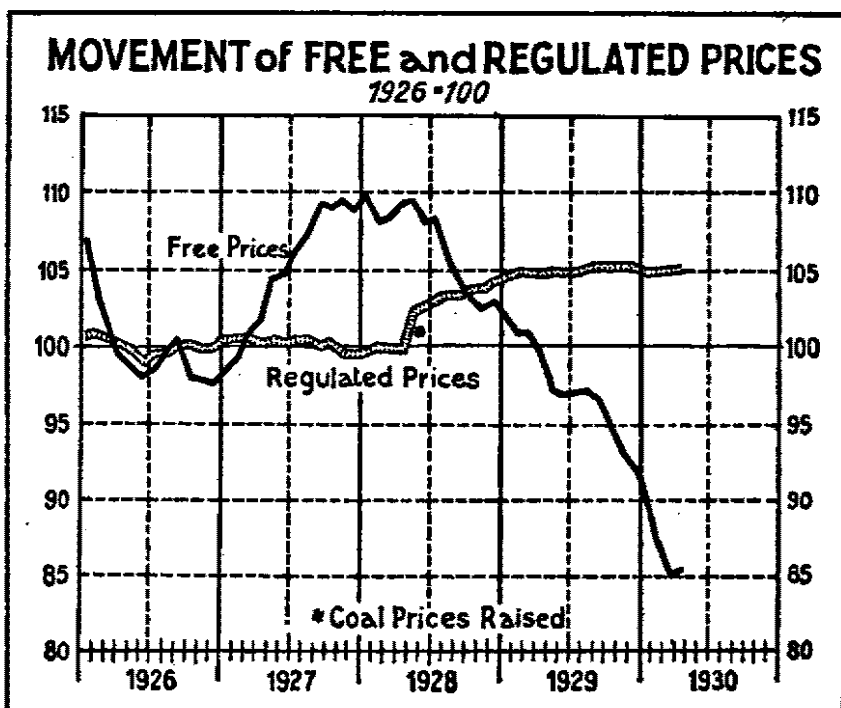
Supersession of the trade, the internal strain between exporters and non-exporters, are however only minor aspects of the development of cartel organisation in the post-stabilisation period. Greater security of cartel organisation has enabled the Ruhr industrialists to use it as a weapon in

* Cf. p. 20.

wage negotiations, not with the unions, but with the government, threatening a rise in syndicate prices, if a wage increase is compulsorily enforced. Apart altogether from the social and political consequences, this development represents an entirely new departure in price policy. It is, of course, from the syndicate's point of view, a legitimate and logical use of their power: if the syndicated employers have based their resistance to an award raising wages on the industry's inability to bear a rise in costs, they must, to make their own case good, raise prices after the award is enforced. The government is thus drawn into a vicious circle of repeated wage and price rises. Many branches have used the weapon, but only in the heavy industry has it seriously impeded wage negotiations and obliged the government arbitrator to insert clauses in the award rendering it void in the event of a price increase—a device which simply prolongs negotiations.

This reversal of the usual sequence, adjusting prices to costs, instead of costs to prices, has disturbed the pre-war inter-relations of business fluctuations, dislocating raw material prices from their close connection with general business conditions (a similar dislocation is noticeable in the case of the capital issue statistics). In 1928, the price index for raw materials and semi-finished goods remained steady instead of following the general downward direction of wholesale prices, as a result of the contrary movements of its two sub-groups, the special forecasting "sensitive commodities" index and the other commodities group index. The source of the divergence—cartel price policy—is indicated by another sub-division of the raw material and semi-finished index, which describes prices as "regulated" and "free"; it exhibits the greater stability of the regulated group, the relatively small decline in the 1926 depression, the relatively small increase in 1927, passing into a definitely contrary movement after the turn of the cycle in the autumn of 1928, remaining steady all through 1929, while the free price level fell rapidly, until at the beginning of 1930 the regulated prices stood at 105 per cent. and the free prices at 90 per cent. of the 1926 base.

Index Number of Wholesale Prices.—Sub-group Raw Materials and Semi-finished Goods :



Regulated Prices : inland coal, pig iron, semi-finished steel girders, bar iron, rolled iron, iron castings, malleable pig, copper, zinc and brass plate, aluminium, nickel, artificial silk, jute yarn, driving belt leather, chemicals, artificial fertilisers, cellulose, newsprint paper, pasteboard, cement, iron tubes and roofing felt.

Free Prices : foreign coal, iron ore, scrap, machine castings, medium fine and tinplate, copper, lead, zinc, tin, textiles (excluding above-named), hides and leather (excluding above-named), technical oils and fats, rubber, paper and building materials.

Prices included in the above free heading include all prices of commodities the prices of which are regulated by foreign

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associations and cartels formed since 1925, i.e., non-ferrous metals and certain textile products, so the difference in the movements is not entirely to be attributed to cartel policy.

In 1925 regulated prices were weighted at 50 per cent. the total weights for the raw materials and semi-finished index.

No conclusion as to the effect of monopolisation in prices can be drawn from these price movements. It cannot be argued that the rationalisation programmes have so far failed to reduce costs, because the conception of a short period supply price is quite inapplicable to the German heavy industry; its cost per unit decreases even with the smallest increase in utilisation of productive capacity and quickly rise as output declines in depression. Nor can the cartels be attacked from the opposite standpoint—of having destabilised general business conditions, intensifying revival in 1927 by keeping prices low, and depression in 1928 by keeping prices high. Undeniably this must have been the effect of their action, but not as a result of deliberate policy. German post-stabilisation conditions did not permit of a schematic summary as a business cycle of the pre-war type, even after the event, much less of forecast on general principles: the cartel cannot be blamed for disturbing the pre-war sequence if it is no longer occurring.

II. COMBINES AND INVESTMENT

Forms so diverse as the great horizontal amalgamation, the loose concern, the calculation cartel, derive their origin from the state of the capital market, the one unifying factor of the whole post-war combination movement; the combines must now be considered as they react on the situation from which they arose as a way of escape. In spite of the complexity of German financial conditions during the "Gegenkolonisation" period, the successive stages are well marked enough to indicate the nature of the parts played by the combines at each stage.

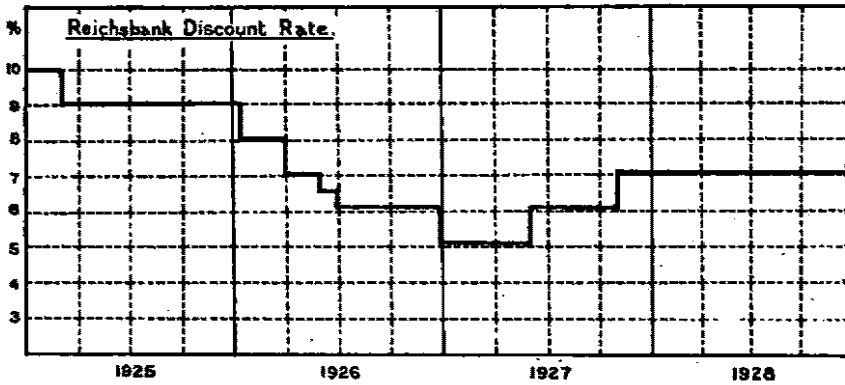
(1) Industry emerged from the inflation period without debts, but with an enormous demand for long and short term credit, which was partially satisfied, up to April, 1924, by the

Rentenbank and other temporary arrangements. Since control by the discount rate was impossible, the Reichsbank then began to ration credit, continuing this policy till the end of 1925. During this period long term demand could not be satisfied and short term borrowing was used as a substitute, in consequence of which an "illiquidity crisis" broke out in June, 1925.

(2) After the crisis had worked itself out, and the Dawes plan came into force, the first great influx of foreign capital began. Repayment of short term loans enabled the Reichsbank to return to control by discount rate in 1926 and in 1927 to reduce its rate to the international level.

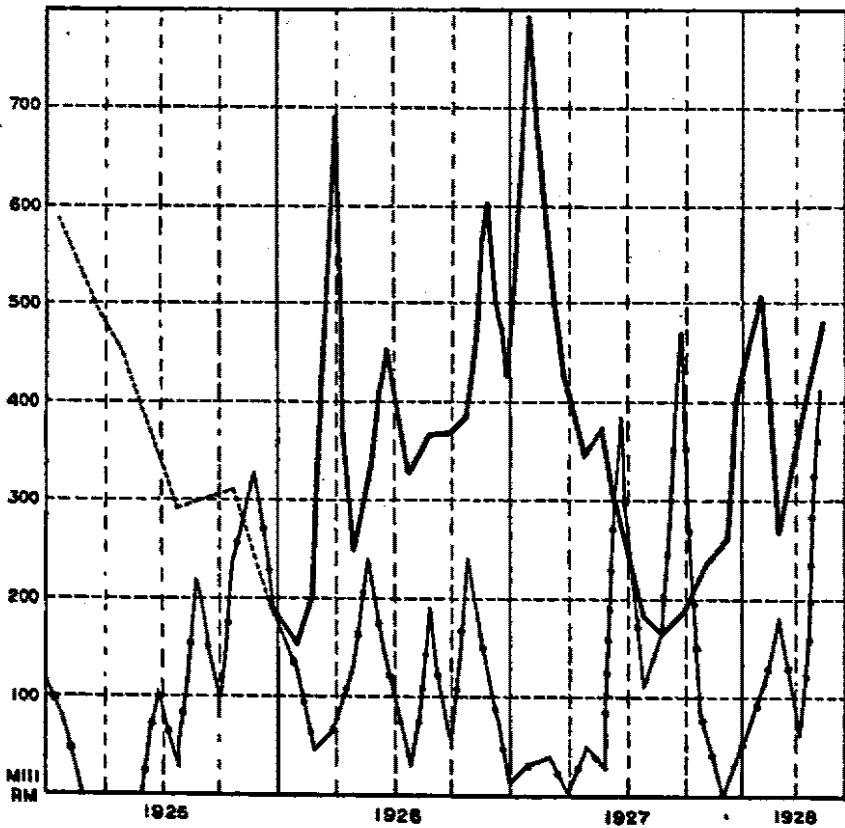
(3) Foreign borrowing was thus checked and security issues increased enormously in the second half of 1926 and the first half of 1927. However, this state of affairs lasted only a short time; the lower rate did not represent the real capacity of the market, which was further overstrained by the 500 RM. government loan issue in February, 1927. The capital market's deceptive liquidity was due to the liquid state of the money market caused by the influx of short-term foreign money, which restrictions on long-term foreign borrowing had stimulated; the two markets had become more closely connected because the banks were keeping a larger proportion of their loans as short-term credits, and were willing to purchase shares so long as the public could take them over with the assistance of these credits. Thus the Reichsbank, in the spring of 1927, was faced with the alternatives of raising the rate and attracting foreign capital, or requesting the banks to reduce the volume of their short-term credits. In conformity with Dr. Schacht's aversion to foreign borrowing, the latter course was chosen, causing a stock exchange crisis of great severity. In spite of this measure, the lower rate could not be maintained and after the rises in June and October the influx of foreign capital began again, continuing till the Federal Reserve rate rose in June, 1928, the withdrawal of American capital being partially compensated for by the influx from the French market.

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Total Security Issues & Foreign Loans.

Security Issues. — (quarterly figures only in 1925.) *Wirtschaft und Statistik.*
 Foreign Loans ← →



In consequence of its dependence on the foreign markets the state of the capital market no longer clearly reflects internal business conditions as in the pre-war period. The German banks developed in the closest relation to industry, undertaking the greater part of all issue business; capital issues were made simultaneously with industrial requirements and the shares held until taken over by the public. Thus conversion operations were reduced to a minimum and the volume of capital issues could be used as an almost infallible index of the state of the business cycle.* This mechanism no longer works: the banks lost control during the inflation period, regaining it temporarily in the 1925 crisis, after which the large concerns again became the predominant partner in the alliance. Over many pre-war combinations the banks had exercised considerable influence, even in one or two cases taking the initiative; in those of the post-stabilisation period they played a subsidiary and usually negligible part—even in one or two cases (conspicuously in the motor-car industry) impeding further concentration.

The crisis of 1925 brought about a complete reshuffling of interests. "Flucht in der Sachwerte" had stimulated industrial investment excessively and the concern had emerged as a new type of inter-connection between firms. The large firms acquired collections of part or controlling interests in all kinds of enterprise, simply as investments and for no other purpose. These agglomerations were described as concerns, in a new sense, because the term trust did not apply to them and they did not correspond to any known type of Interessengemeinschaft. Some grew up round the great heavy industry firms, of which Stinnes overshadowed all others, others round the electrical firms, particularly the A.E.G., others round the wholesale trade. They were all,

* The figures were even used as one of the two principal series in the forecasting barometer based on Spiethoff's cycle theory, and acted as a valuable support for the theory itself, though only by reason of the peculiar German conditions; elsewhere capital issues figures could give no results. Although, since stabilisation, increase in the volume of issue could no longer be relied upon as indicative of industrial boom about a year ahead, as it had been in the pre-war period, the figures continued to be used with an almost mystical faith in their prognostic character until 1926, when the great volume of capital issues upset all calculations.

without exception, broken up in the crisis, in most cases by transference of the collected interests and writing down of capital to half or even one-third its nominal value. The Stinnes collapse, however, seemed to threaten the whole fabric of German industry. On the eve of the crisis, Germany thought—"Wenn Stinnes kaputt geht, dann geht Deutschland kaputt!" Not only was the dominant group of the Western heavy industry threatened with ruin, but the whole principle of vertical integration seemed denied. Actually, of course, the Stinnes concern was no more vertically integrated than the wildest of the inflation growths and its break up only signified the end of concern formation; the result of the crisis justified sound finance and not any particular form of organisation. It affected most severely those concerns which had continued to acquire industrial interests after the currency was stabilised—the Lothringen concern, Stumm, Sichel, Kahn, Georg von Giesches Erben, Rombach. Others were able to retain their identity after drastic capital reduction—for instance, the Stahlwerke Becker and Rheinmetall, now the property of the Steel Union. The Krupp concern itself survived with difficulty after the refusal of a state subsidy. Of the eight or nine leading heavy industry concerns flourishing at the end of the inflation period, only the three, which had carried out the principles of vertical integration successfully, survived the crisis undisturbed; these were Thyssen, the old rival of Stinnes, which had deliberately stood out of the combination movement and used the profits of inflation to make its works the most technically perfect in Europe; Klöckner, the Lorraine firm which had acquired Ruhr interests after the war, and combined them into an economic unit, and Hoesch, a well-organised vertical concern. But that finance rather than vertical organisation alone was the principal factor in their favour is proved by the fact that the other Ruhr concern in the same position was Harpen, the only remaining independent coal mining concern of any size. The large non-competing groups in the electrical and chemical industries (the dyes Interessengemeinschaft had not yet amalgamated) also survived the crisis; the Dyes group did

more, paying an 8 per cent. dividend for 1925; these could attribute their success, not merely to having refrained from the excesses of inflation concern formation, but to reserves accumulated after years of self-finance.

But the crisis, while it broke up many concerns, did not abolish the concern as the prevalent type of financial inter-connection. Credit shortage remained a permanent feature of the situation: in 1926, according to Hirsch's estimate, a gross industrial output of the value of the pre-war output had to be financed with two-thirds of the pre-war working capital. The amorphous entity—hardly a form of combination at all—which arose as a means of investing in industrial property, remained as a means of economising working capital for some time after the end of the "Sanierung" period, continuing to be the prevailing type of industrial organisation, up to the middle of 1926. According to official figures, at the end of 1926, 13.2 milliard RM. (out of a total of 20 milliard RM. invested in share companies) was invested in "concerns," and 14.6 milliard (out of a total of 21.3) at the end of 1927; these figures describe any kind of financial connection, even the fusion, as concerns, and do not therefore indicate its actual prevalence, except as contrasted with the prevalence of the independent firm, since it can be assumed that amalgamations never took place between firms not previously connected in a concern.

The effect of the movement has been a diminution in the power of the banks. A witness* before the Enquête-Ausschuss stated that the amount of shares in permanent ownership was much greater than before the war, and that the increase was due to the spread of concern formation, not to increase in the holding of the banks.

The genuine post-war combination movement began in the autumn of 1925, with the negotiations for the formation

* Evidence of Dr. Schlitter before the third group of the Committee (Wandlungen in den Organisationsformen). Unfortunately he could not give even a rough estimate of the size of the increase.

"Dr. Schlitter: die Aktienbeträge, die heute in festen Händen sind, procentual viel grösser sind als vor dem Kriege."

"Vorsitzender: Dreht es sich um Bank oder Konzernbesitz?
Dr. S.: Um Bankbesitz fast gar nicht. Der Konzernbesitz spielt eine sehr grosse Rolle, eine viel grössere als früher."

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of the steel union and the dyes trust. As soon as it became possible to raise the capital in the home market, the movement gained in momentum, and groups of firms in every branch amalgamated. In 1926-27 between seventy and eighty fusions involving over 1 mill. RM. capital took place. The majority represent no more than attempts to raise capital and deserve no particular attention, few included entire branches of production. The steel and chemical combines, by reason of their size and inclusive character and the re-organisation which has accompanied them, are not representative of the combine movement on the industrial side, but financially they exhibit the culmination of tendencies working in almost every case.

Into the financial affairs of the dyes trust it is not possible to penetrate far; the balance sheets of the company have carried reticence beyond the limits of decency acknowledged even by trusts. Concealment of the position is possible because the greater part of the company's capital is owned by the management. In this one sphere at least Dr. Bonn's condemnation of German capitalism is justified, seeing that the concentration of ownership is a result of deliberate policy, and not a natural development, as in many large concerns, from the circumstance of family ownership. By means of the issue of plural voting shares, the management had under its control in 1926 six hundred and forty of the 1,100 mill. RM. share capital, the public four hundred and sixty.*

* Capital of the I.G. Farben Industrie, 1926.			
Ordinary	1925	.. ..	641.6 Mill. RM.
	1926	.. ..	258.4
Preference	1925	.. ..	4.4
	1926	.. ..	195.6
Total			1100.0

Of the Preference shares the 4.4 mill. had originally a voting right of one hundred each, which was reduced to ten in 1926, when the new capital issue took place. Of the new issue 160 mill. are six per cent. cumulative preference shares with single voting right, 35.6 3/4 per cent. cumulative preference shares with tenfold voting right. Of the ordinary shares 128.32 million were sold to old shareholders, an unspecified amount to the dynamite group at special terms, and the remainder was taken over by the management. No information was given at the time of issue as to the purpose of the issue of ordinary shares or of the reduction of the voting power attached to the old preference shares at the same time as new ones were issued.

One thing can definitely be asserted as to the trust's financial position—it is not over-capitalised. For the past four years depreciation has taken, roughly, one-third of the gross profits, while its dividend has never fallen below 8 per cent.* (a high return for the heavy industry even in years of revival), a position achieved by a systematic policy of investment in the concern and steady dividends. The policy began as far back as 1904, recommended by Duisberg as a means of refuting the charge of excess profits due to monopoly. It has, of course, a better justification: according to the evidence of Duisberg's colleague, Bosch, before the Enquête, in 1927, technical progress compels complete renewal of plant every ten to fifteen years. By this means the trust has rendered itself independent of the capital market; only with control of its own capital resources could it have undertaken the vast new constructions of recent years. The date chosen for its last capital issue (January, 1928, when the market could hardly have been in a more unsuitable state) marks the culmination of its policy of independence. Its share issues in foreign markets were undertaken with the object of co-operating with an American concern and with the object of avoiding taxation (the capital of the I.G. Chemie, the Swiss holding company of the trust, was raised in January, 1929, with this object) and not for the reasons (the unsuitability of the German market or its own financial embarrassments) which drove the Steel Union to borrow abroad.

The Steel Union, by contrast with the Dyes I.G., was planned in circumstances of financial embarrassment and comparative publicity. The great concerns of the heavy industry, unable to meet their liabilities at the end of 1925,

* Balance Sheets of the Constituent Companies of the Dyes Trust.

	Million RM.			
	1927.	1926.	1925.	1924.
Gross Profit	224.30	186.07	168.56	144.66
General Overhead Charges	48.75	42.12	45.19	44.09
Profit	175.55	143.95	123.37	99.97
Depreciation	74.44	75.23	55.77	45.26
Annual net profit ..	100.81	68.72	67.60	54.71

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regarded trustification as a means of raising capital, as other amalgamating concerns did, and not as a rationalising agent except for purposes of press discussion, since the works had been re-equipped during the inflation period. Consequently, unlike the Dyes I.G., it is open to the suspicion of over-capitalisation: from the first it seemed unlikely to escape this danger, incurred by many trusts. The figure for the share capital—800 Mill. RM.—had been fixed upon before the Krupp concern (160 Mill. RM. capital) decided, in view of the possibility of a subsidy from the government, to withdraw from the negotiations; however, it does not follow from that reason alone that the figure is excessive, since the Thyssen concern was private property and valuation was impossible in the existing state of the market, though it would no doubt have been wiser not to raise the figure for the Rhein Elbe union.* According to the first test suggested in the Balfour committee's memorandum on over-capitalisation, the company does appear to have fixed its capital at slightly excessive height. As to the second test—earnings—the trust's results were disappointing in view of the very favourable circumstances† of its first year, the British strike,

* Capital of the Constituent Companies.

		1925.		In the Union, 1929.	
Bochum Verein	}	56	291.6	316	
Deutsch-Luxemburg		97.5			
Gelsenkirchen ..		138.1			
Phönix		300	208		
Thyssen		—			
Rheinstahl		160	68		
Total		751.6	800		

† Balance Sheets.

Mill. RM.

	Share Capital.	Loans.	Turn-over.	Gross Profit.	Net Profit.	Dividend. %	Depreciation.	Loan Service.
April-Sept. 1926	800	—	1250	—	26.5	3	26.4	—
Sept. 1926-27 ..	800	523.5	1420	280.4	52.9	6	85.4	21.8
Sept. 1927-28 ..	800	513	1420	289.2	52.5	6	86.8	14

in its second, revival in the German market and in its third revival in the international market—disappointing enough to give rise to rumours at the end of 1927 that the trust intended to reduce its share capital by half. So far the company has succeeded in excusing the low level of dividends by the unexpectedly high cost of re-organisation. Fortunately for the rationalisation programme, the constitution of the company minimises the pressure on the company's dividend policy; the trust is not likely to follow the example of numerous American corporations which failed owing to the deflection of working capital to the payment of interest and dividends.* The union took the form of a holding company and not a complete fusion, as it was not desired to transfer to it the liabilities of the constituent companies; these retained their independent existence, having simply exchanged their plant against the shares of the Steel Union, and using the dividends received to pay off liabilities previously incurred. Their balance sheets are not clear enough to suggest the effect of their position on that of the Steel Union, which remains obscure for this reason, rather than on account of reticence in its own balance sheet. Even after the debts of the constituent companies are paid off, they intend to preserve their separate identity, as the controlling influences in the Gelsenkirchen† and Charlottenhütte, Vögler and Flick, desire to secure their influence against Thyssen, the largest individual shareholder; and Rhein Stahl controls works outside the trust and has special connection with the Dyes I.G., so that only Phönix and Van der Zypen are likely to dissolve.

Although the trust's financial position is not strong, it has succeeded in its financial purpose, by enabling the constituent companies to borrow abroad on an enormous scale. In the first year of its existence it issued a series of loans amounting to 523 Mill. RM. (of which, however, only 134 Mill. RM. represents additional capital). The other concerns of the heavy industry with the exception of Krupp, have not borrowed on such a scale—their financial situation

* Dewing, *Corporate Promotions and Reorganisations*, p. 602.

† The other two members of the Rhein Elbe union amalgamated in 1927 with the Gelsenkirchen Company.

was not so serious. Their size and reputation enabled them to borrow in the American market without preliminary combination, and to convert their loans to shares in the home market early in 1927.

The combine movement, as exemplified by these two trusts, is evidently capable of a two-fold effect. The large size of the concerns should enable them to forecast their demand for capital more exactly over long periods, to work in closer co-operation with the banks and with each other, to obtain better information as to the future financial situation. This stabilising tendency does not seem to have worked strongly in recent years. On the other hand, a combine may use the fact of its combination as a factor in borrowing abroad, or carrying out transactions regardless of the state of the home market. Such policy does not necessarily destabilise the home capital market, except in so far as banking policy is robbed of some of its effectiveness. Though the financial power of the combines intensifies the contrast between the heavy and finishing branches, it must by diminishing their capital demand in the home market have eased the situation for these to some extent.

On the character of saving, the growth of financial combines must have had considerable effect, by strengthening the traditional tendency of German industry to invest in the concern. Although no single concern has ever reached the degree of independence achieved by Courtaulds or the American aluminium trust, the practice is so prevalent in many branches of industry—not only in the coal and metal firms of Westphalia and (above all) Upper Silesia—but also in the Saxon textile concerns and the highly-skilled finishing branches, that it appears likely that a greater proportion of total savings is made by the concern than in Great Britain. This supposition is not supported by the available estimates.*

* Helfferich (*Deutschlands Volkswohlstand*, 1915) put the percentage of total savings through the concern at 37 per cent. of total savings (3 Milliard RM. out of 8½ Milliard) while an estimate for the post-war period (*Wirtschaftskurve der Frankfurter Zeitung*, III, 1928) puts it as low as 28 per cent. (2.5 Milliard RM. of 9 Milliard) for 1926, an exceptional year; in both cases below the Colwyn Committee's estimate (*Report*, p. 17) of 38 per cent. for Great Britain, and Dr. King's 40 per cent. for the United States (quoted by Mitchell, *Business Cycles*, p. 152).

These are, of course, extremely meagre and not sufficiently detailed for international comparison. However, even if any importance could be attributed to these estimates, the significance of the prevalence of self-finance lies not in its actual extent but in the kind of new construction which it stimulates. Re-equipment of plant by investment of profits does not fundamentally affect the functions of the capital market, but in Germany in the past four years, shortage of capital, in conjunction with the existence of highly-concentrated coal and chemical industries, has produced a development of the deepest theoretical interest. The expansion of the new industries, synthetic nitrates, artificial silk, low temperature carbonisation and hydrogenation of coal, has been financed by the consolidated coal and chemical industries jointly and individually.* For the coal industry, these undertakings represent an escape from its marketing problem, since the new undertakings are coal consumers; for chemicals, the transference from less prosperous older branches to the newer represents a necessity also, though less pressing than in the case of coal. Investment of this kind must be clearly distinguished from the concern expansion of the inflation period; if the actual direction of the new companies does not lie in the hands of the old, the technical inter-dependence is of the closest; the new industry represents more than expansion of the old—it is a new orientation of it, in which its raw material resources and chemical experience are given wider scope.

The new industries' method of expansion presents a marked contrast with their development in Great Britain; here the new industries, with the exception of nitrates, were financed by speculative issues in the market. In 1928, twelve of the eighteen artificial silk issues were speculative in character: coal distillation projects have been financed in the same way, though in some cases the gas works have played the same part as the coal and chemical concerns in

* Some of the larger capital issues of 1927 and 1928 were companies of this kind: The A.G. für Kohleverflüssigung, Ruhrgas A.G., the A.G. für Kohleverwertung (treatment of coal); Kohlechemie A.G. and Klöckner (nitrate works); Rhodiaseta of Freiburg, an artificial silk concern financed by the Ruhr mines.

Germany. (In France, under unsettled financial conditions and relatively greater concentration, the new industries have developed on lines similar to the German.) In this country the mere fact of amalgamation has not enabled the chemical trust to take the initiative ; on the contrary, the I.C.I. has pursued the old policy of acquiring unconnected established firms in a weak financial position, a tendency which German industry has now overcome. The French and German method undoubtedly promises a sounder development for the new industries of the type which requires long periods of gestation and commercial experiment, large units of production, immense capital reserves, and accumulated technical experience.

The development, as yet in embryo, represents the logical consequence of self-finance. If the combine takes over from the market the function of financing its own expansion, the risk-bearing function in investment in new industries must be undertaken also. But if the genesis of new industries no longer depends on economic laws operating in the market, the theory which treated capitalism as a system regulated by risk-bearing commodity capital and money markets loses its last foothold. The risk-bearing function is not merely transferred—the genesis of new industries proceeds on different lines altogether. It proceeds more swiftly and surely and secretly than in the old conditions ; a new industry need no longer pass through the preliminary stage of commercial failure, caused by inability to reduce costs as output increases and prices fall (as the pre-war nitrate works did), or by dissipation of resources by division of profits up to the hilt (as the first Chardonnnet silk works did). The general investing public is excluded at the same time from sensational gains or losses ; against the decline in the number of shareholders has to be set the decline in the number of speculators.

That industry has in the past few years progressed so far in the direction of financial independence is due partly to the natural tendency of the trust movement, partly to the necessity of escaping from the rigid control of the capital market necessitated by financial stringency. The close

co-operation of the pre-war period between finance and industry has disappeared, as on both sides direction by semi-autonomous corporations pursuing conscious policy (though unaware of their ultimate objective) has been substituted for the operation of economic laws—which would undoubtedly have reduced the economic situation to chaos. Neither can be judged as if it were a mere adjustment of competitive capitalism, neither can be discussed as if it were the only conscious policy affecting an otherwise mechanically operated system. “Managed” industry is the complement of “managed” finance, yet either carried to its logical conclusion would be incompatible with the other. There can be no principle of co-ordination between co-ordinated industry and co-ordinated finance; in the incalculable interaction of the two lies the complexity of the German economic situation.

CHAPTER VII

THE PROBLEM OF STATE POLICY

MUCH less is heard of the "trust problem" or the "cartel problem" in the past few years; generalisation is more difficult than it was in the past, because the combine movement has passed rapidly through different phases and has become, not merely an aspect of German industrial development, but a crystallisation of that development itself. Before the war the combination movement could be judged from a general standpoint; trusts and cartels could be considered as factors in the expansion of the home and export markets. In that situation, maintenance of high prices, restriction of output, were not, *prima facie*, beneficial; although their value as export stimuli was obvious, it had to be set against their contracting influence on the home market. Now there is no longer a general industrial interest, such as there is generally agreed to be in Great Britain. Each cartel or trust is the outcome of a peculiar situation and must be judged on its efficiency in that situation only. In a country with its heavy industries in a state of continuously threatening over-production, with new industries enjoying sustained prosperity, older finishing branches retaining a weakening hold on the protected home market, numerous small branches relying almost entirely on export, a country which has financed the re-equipment and expansion of the whole, first by inflation and then by foreign borrowing, the combine's functions are too various and complex to permit of summary out of the particular setting.

In view of the complexity of the German conditions, it is not surprising that legislative policy has taken no coherent direction, though its failure is attributable also to the general difficulty which besets any state policy. Every modern state, whether it legislates or not, must take up some attitude; it must either permit and encourage, or hinder

and forbid, yet none dare admit to the first attitude, none having succeeded in making the second effective. The course, taken by many European states in the post-war period, of creating administrative machinery with power to intervene when combines have behaved in a way which endangers economic welfare, simply shelves the problem: before action can be taken a rough definition of economic welfare, some rough test of what constitutes injurious action has still to be found, and that is almost impossible, so much do circumstances alter cases. The German legislation has not been any more limited in scope, or futile in effect than the legislation of other states, but the German democracy is perhaps farther than any other from a consistent attitude to the combine movement. The cartel decree, promulgated at the end of the inflation period, before the beginning of the genuine post-war combination movement, was inspired by the crude theoretical assumptions of the pre-war period and is consequently out of contact with public opinion, with the spirit of German Civil law, as well as with the abuses it purports to remedy.

THE CARTEL DECREE :

(i) PROVISIONS AFFECTING CARTELS

The legislation of 1923 was prompted by prejudice against combines, particularly cartels, as the popular title "cartel decree" recognises, though its promoters would not admit it, claiming that it was a specially deft intervention in economic affairs, designed to check the abuses attending industrial combination and to preserve the attendant benefits. Producers' combinations as such were not to be attacked, only "abuses of economic power." The provision of administrative machinery, permitting state interference in cases of abuse was not enough—the clauses of the civil code giving security to contracts had to be altered, but only in so far as cartel contracts were concerned. That is, a special code was created for such contracts by reason of their economic character. Now if there had been no prejudice against the

cartel as such, the logical course would have been to prohibit certain activities likely to be economically injurious, and to prohibit them by whomsoever practised, not to interfere with certain kinds of contract, unless the legislators believed that such contracts are usually the basis of monopolistic powers, and that abuses can be best avoided by striking at the root of the abuse, the economic power, and not the abuse itself. However innocent the legislators' intentions, however trivial the effects, the decree itself did amount to an attack on the cartel system.

Why, then, was the decree promulgated? At certain periods in certain countries it has appeared axiomatic that combines ought to be controlled, for they tend to exploit the consumer, whom the state, if it can, should protect. In England it does not now so appear. Nor did it appear axiomatic in Germany before the war; opinion was indifferent. Why then should the necessity for regulation have become apparent when it did? Opinion before the war was indifferent, but theory was not; the slightly stale pre-war discussion, aimless and barren as it often was, was the outcome of a much deeper interest than was ever felt in England. But theory could not carry with it the power of prejudice and opinion, because belief in free competition did not prevail. There is no need to seek to explain this absence of belief by reference to a mysterious national psychology, revolted by the mechanical clean-swept world of *laissez-faire*, where there are no institutions to check the operation of economic laws, save the institution of free trade itself. Opinion acquiesced in the existence of producers' combines for the best economic motives: the benefits derived by producers from the cartel system were obvious, the injuries to consumers less obvious, and in a time of industrial expansion every economic subject thinks of itself as producer first and consumer second.

Did economic theory after the war, then, take a closer hold upon opinion? Theory of a kind certainly did, but the hungry sheep were adequately fed by "Planwirtschaft," a system combining elements of Whitleyism and Fascist and Soviet syndicalism with the most correct sentiments,

representing the antithesis of the liberal doctrines held by the party in power when the decree was issued. Popular support was attracted simply because by November, 1923, inflation had proceeded beyond the stage of benefit to certain producers to the stage of disaster to all consumers; the nation was prepared to welcome any hope, however futile, of reduced prices. The decree originated in the economic chaos of the time, not in a genuine belief in its necessity. German opinion twenty years before had been interested and instructed by the lengthy enquiries of 1903-4, which suggested no necessity for legislation, yet at a time when the benefit of any organisation which attempted to fix prices at any level might have been obvious, the Reichstag approved the decree without enquiry or debate. Had cartel price policy really been responsible for any of the confusions and injustices which attended inflation, there lay ready to hand special legislation against profiteering, quite sufficient to protect.

The decree was thus carried through by a temporary aberration of opinion, during which the argument of orthodox theory suddenly took on practical significance. This argument is too well known to require summary, but it must be pointed out that the decree, even from its point of view, was not satisfactory. The theory behind the anti-combine argument regards capitalism as a system regulating itself by free competition between producers, consumers and the factors of production, in such a way that every economic subject is rewarded in accordance with its services. If at any point competition is checked, the working of the system is upset, for some subjects receive unearned income. Combines, cartel and trust alike, with their avowed intention of reducing competition in the sphere of production are held to be pernicious and their control—extinction being out of the question—by the democratic state is held to be a necessity. The temporary alliance of opinion and theory did not work out favourably for the theory; assuming that the argument in its crude form is valid, the decree was limited in scope, for it concentrated, not, it is true, in its provisions, but in its actual working, on the cartel contract only, not on monopolistic organisations in general.

In order to appreciate the nature of this limitation it is necessary to examine the more important clauses of the decree.

The vital clause 8 amounts to a re-modelling and extension of clause 723 of the Civil Code, which gives parties to certain contracts a right of rescission under certain circumstances, worded in such a way as to multiply uncertainties. Under the civil code an association of producers may take any legal form, but the loose association usually requires nothing more permanent than a civil law partnership, a contract which can be legally enforced and creates no legal personality and does not necessitate registration. A member of such a partnership can withdraw from it for a "cogent reason." Such a reason is held to exist if the continuance of the partnership is *contra bonas mores* or if one of the partners or external circumstances prevent the fulfilment of the object of the partnership—e.g. persistent under-selling of syndicate prices would be a cogent ground for withdrawal by other members. A partnership of this kind is the only form which a cartel can take which permits rescission for a cogent ground, and therefore before special regulations for cartels existed, the decision as to whether a particular contract was a civil law partnership or not was an essential preliminary to every cartel contract case—and the principal ground of controversy.

The loose agreement signed by many members takes another form, that of a "registered association" under § 21 of the Civil Code; the "eingetragene Verein" has two species, one intended for trade associations, learned societies and so on, and the other form for associations carrying on an economic enterprise (*wirtschaftliches Geschäftsbetrieb*), much more cumbersome, being constituted by special charter granted by the state. No cartel has ever taken the second form, though there are hundreds of "registered association" cartels, a situation which aroused horrible controversies as to the meaning of "economic enterprise" and the subtle distinction between "Erwerbszwecke" and "wirtschaftliche Betriebe." In a case which came before the administration in 1921, the Finance Minister decided that all partnerships which obtain economic advantages for their members are

carrying on an economic enterprise, implying that all the cartels registered under BGB § 21 were illegal; but it is generally held that he did not realise the importance of the decision, which would deny the status of registered association to all cartels, since no further action was taken, and the hundreds of registered associations continued to function, untroubled by doubtful legality. The registered association is a form particularly attractive to the cartel with many members, because rescission on a cogent ground is not permitted within two years of its foundation; it is thus more stable than the civil law partnership and unlike it, has a committee of management. It is the form favoured by "condition" and "calculation" cartels in the textile branches and the specialisation cartels in the machine construction branch. It resembles the English trade union in that it possesses juristic personality of an irregular kind: it cannot sue but it can be sued. (In German law there is no definition of legal personality and the doctrine of *ultra vires* is not recognised.)

The highly organised cartel needs greater security and permanence since it wishes to centralise selling and control output by the allotment of quotas, and always founds either a share company or a limited liability partnership. The Aktien-Gesellschaft must conform with many requirements in particular relating to registration, and the regulations for publication of balance sheets corresponds to those for the English public company; the Gesellschaft mit beschränkter Haftung need not register or publish a balance sheet. Whichever form the cartel takes—and it usually prefers the G.m.b.H.—it may organise itself either as

(1) The double partnership, in which the parties to the contract are the members of the cartel and the company which they have founded. The nature of the special contracts made between the two is matter for controversy and has a certain importance; if they are cartel obligations (Flechtheim's contention) they become void if the cartel contract is rescinded, if they are ordinary contracts (Isay's contention) they remain valid when the cartel contract has expired.

(2) Or as a single G.m.b.H. In this case the cartel itself is the limited liability partnership and the cartel obligations are the "contributions" of § 3 of the G.m.b.H. law. This is the most rigid and stable form of organisation; right of rescission only exists after judicial decree.

The cartel decree's chief significance consists in having modified all these contracts by extending to them all the right of rescission on a cogent ground, previously only possessed by the civil law partnership, and at the same time defining the "cogent ground" anew. Under the eighth clause of the decree, the right of rescission is to exist "for contracts and agreements which contain obligations concerning the regulation of production or the market, the method of price-fixing or the raising of prices (syndicates, cartels, conventions or similar agreements)." The right of rescission exists not only for all principal contracts but for all contracts made under them. The critical point, however, remained unsettled for three years—was the cartel in the form of a limited liability company subject to the decree's provisions? If it was not, then the decree's effectiveness was very limited; if it was, profound changes of company law might be involved. The cartel court decided in July, 1926, that the G.m.b.H. cartel is not exempt from the action of the decree.

In the new definition of the cogent ground, the interests of the parties, and not of the public, are considered, and it therefore introduces a concept wholly alien to the principles of German civil law. A cogent ground is held to exist if the economic freedom of the rescinding party, especially as to production, market or price-fixing, is uneconomically limited. "Uneconomic limitation" suggests the "partial restraint," i.e. unreasonableness in the interests of the parties to the contract, of English common law, but German law can use the concept more freely, since the court can take expert evidence, as an English court cannot.

The eighth clause at the time of its announcement caused general alarm; it seemed to undermine the cartel system very seriously indeed. Its effect of course depended wholly on the interpretation of the "uneconomic limitation" clause. No one anticipated that the court would take the line it

actually did ; the positive effects of the eighth clause have amounted to no more than a slight disturbance of cartel activities.

A more serious, though less obvious, weakening of the system has been due to clause 9 : it prohibits the imposition of penalties for the infringement of cartel discipline without approval of the court and thus virtually destroys the "Organisationszwang." If approval is refused, the cartel cannot institute legal proceedings. The existence of this clause enfeebles the price cartel with numerous members, for the powerful syndicate with few members can usually settle such disputes by arrangement. If the cartel is to be permitted to exist in any form, its powers ought to be restricted by prohibiting definite activities, and not by weakening its discipline as a whole.

The same concentration of attack on the weaker organisations is effected by the clause exempting the compulsory syndicate from the provisions of the decree. The exemption was necessary, since otherwise the government might have found it necessary to protect the common welfare and public economy from the behaviour of organisations, which, being the offspring of "Planwirtschaft," are presumably above reproach. The organisations which the legislators had in mind were constituted by laws passed in 1919 and were the outcome of the Socialisation commission's rejection of complete socialisation in favour of the ideas of Wissell and Möllendorf. It was intended to equip each great industry with a deliberative assembly and executive council, representative of employers and employees, traders and consumers, whose function should be to approve the measures taken by the syndicates under the same law, and to initiate measures themselves if they so desired. The coal, lignite and potash, electrical and iron industries received these constitutions ; the coal and lignite compulsory syndicates remain, but the machinery of council and assembly lapsed, making a small show of reality in 1927 ; the potash organisation was really an adjustment of the pre-war compulsory syndicate with no doctrinaire origin ; the electrical assembly and council straggled on for a year or two ; the "Eisenwirtschaftsbund"

never lived—even the minister who introduced the law implored the industry to think of something better. The system failed because it had no work to do, not because its work was too hard ; in the years 1919-23 producers, traders and consumers had only one interest—increased output, in which compulsory syndication could not assist. Towards recent proposals for non-doctrinaire compulsory syndication “ cold socialisation ”—in industries genuinely needing restriction of output—as cigarettes and cement—recent Cabinets have shown themselves hesitant ; such organisations could not be exempt from the decree’s provisions.

(ii) PROVISIONS AFFECTING TRUSTS

The decree’s principal significance lies in the clauses affecting the cartel contract, which do not affect combines whose members have lost their financial independence. This of course limits the decree’s effectiveness, from the standpoint of orthodox theory, which regards the trust as the more dangerous of the two forms of combination. The decree does include provisions for dealing with trusts, but these have had little effect because the initiative lies with the Minister for Economic Affairs, who has shown himself reluctant to intervene ; in the first five years of the court’s existence only three cases were introduced under these sections of the decree, of which one was withdrawn and one abandoned. What interest the clauses have lies in their resemblance to the doctrines of English common law.

Clause 10 gives the cartel court power to deal with abuses arising from a greater variety of organisations than the definition of clause 1 allows : these are “ trade terms or methods of price fixing by undertakings or by combinations (trusts, pools syndicates, conventions and similar connections).” The novelty is “ undertakings ” and since undertakings cannot injure their members, but only the public, by their policy, some definition of what constitutes injury to the public must be found. At the instance of the Reichswirtschaftsminister the court may veto economic activities which endanger the general welfare (*Gemeinwohl*)

or the public economy (Gemeinswirtschaft). The first phrase is a puzzle for jurists and the second for economists ; both conceptions are wholly new to the Civil Code, for they are evidently intended to be wider than *contra bonas mores* ; they are in fact relics of " Planwirtschaft " which seems to have familiarised public opinion with the idea of offences against a Social-Economic Whole. " Planwirtschaft " was a very political economy, and freedom of trade was the reverse of its requirements, so that the definition of injury to the public economy was not easy. Clause 4 states that " the public economy or the general welfare is held to be endangered if production or market is restricted by means not economically justifiable, or if prices are increased or maintained at a high level, or in cases where prices are calculated on a cost basis, where premiums for risk are added, or if economic freedom is wastefully (unbillig) checked in sale or purchase or by the fixing of discriminating prices or terms." The phrase which the Court has to interpret is therefore " not economically justifiable " rather than " injury to the public economy," and, though it is simpler to understand it is no easier to determine in individual cases ; the offences contemplated are obviously more likely to injure the " Gemeinwirtschaft " than the " Gemeinwohl."

The latter phrase suggests the " public policy " of English common law, which is usually held to prohibit a general restraint of trade, but the analogy is weaker than that between " uneconomic limitation " and " partial restraint." In England the doctrine of public policy evolved slowly and few are sure of it. Lord Macnaghten's formulation is accepted so far as economic policy is concerned as the doctrine itself. " All interference with individual liberty of action and all restraints of trade of themselves are contrary to public policy and therefore void. That is the general rule." But there may be something more " if the restriction be reasonable, reasonable, i.e., in reference to the interests of the parties concerned and reasonable in the interests of the public." The distinction between the partial and general interest which this doctrine makes was emphasised by Bowen, L. J., in the

same case: "An absolute restraint between the parties might be reasonable but yet might directly tend to injure the public—a point which I desire to leave open and which, having regard to the growth of syndicates and trusts may one day become extremely important." The use of "contrary to public policy" may be avoided if the interests of the parties are considered first, as it is argued by F. D. Simpson, (*Law Quarterly Review*, 1925) that it has been in the eleven combine cases, and that consequently combines can obtain the assistance of the law to enforce contracts detrimental to the public; there is, therefore, no ground for the general belief that such a contract is unenforceable. Mr. Justice Eve's decision in the *British Ropes Case* (Court of Chancery, July 29th, 1927), which was reversed on appeal, seems to support Simpson's view: judgment was given on the ground that the restraint was unreasonable in the interests of the parties, but it was admitted that the public had been injured. "You will never persuade me that any combination of the manufacturers puts down competition for the benefit of the public. Such combinations are against public policy." But not illegal. The combine "was really formed to keep prices up and when competition had been reduced to the smallest possible limit to impose upon the public a price in excess of what the public would be called upon to pay if competition had been left to find its own level. There was nothing illegal in that. If manufacturers chose to combine to keep up prices they were entitled to do so but they must not expect people to believe they did so from philanthropic motives."

The obstacle which prevents the use of the doctrine in England is not disbelief in its value, but the impossibility of taking evidence:—if once the doctrine was treated as a question of fact, not of law (as Sir John MacDonnell advocated in his statement presented to the Commission on Trusts in 1919) the court would have to become an administrative tribunal with power to call expert witnesses. If the doctrine is to be used in an English court at all, the definition of what is "public policy" must be narrow and technical—it must mean freedom of trade *sans phrase*, for a restraint cannot be described as reasonable in the interests of the

public unless its economic effects have been investigated. The freedom of interpretation of the doctrine is only apparent, for it depends on its being unused. Public policy is regarded as a dangerous doctrine because its application would introduce administrative law.

So far as the public interest is concerned (assuming that combinations are likely to injure it) the German decree provides a better protection than the English common law ; so far as the security of the cartel contract is concerned the situation is much the same. But it is not generally observed that the decree has been used for administrative purposes of exactly the kind feared by English law. It acquired a temporary importance by being drawn into the government's campaign for the reduction of prices in 1925 ; the Reichswirtschaft minister announced that all decisions and agreements which directly or indirectly caused an increase in prices were to be regarded as illegal, and that all the weapons of the cartel court were to be used against them, either by taking action before the cartel court or by administrative decree. The scope of the decree was considerably widened, since *all* classes in contracts *likely* to raise prices were both regarded as dangerous to the commonwealth and public economy. The government's aim was to introduce, working in collaboration with the state governments and trade associations, nothing less than free competition in all spheres. Between the announcement of the policy prices fell and unemployment increased to an extent sufficient to satisfy opinion ; the government's action had not, and could not, of course, have caused the general price fall. The minister was insatiable and requested the Federal Economic Council to prepare a bill for the general reduction of prices, with certain ridiculous specified provisions, such as the prevention of rings at public auctions. This the Council refused to do. No special action was taken before the cartel court ; certain associations reduced their prices on the minister's request. After the Economic Council's reply the campaign expired ; it had prepared public opinion for industrial depression as a moral desideratum and there is no need to detect in it inexcusable insincerity at a time when

controversy was raging round the Reichsbank's discount policy, and the same Cabinet engaged in introducing a higher tariff. Still, it shows up the defect of the present law—the possibility of interference by the administration without the advice of economic experts—for there was no need to consult the Economic Council at all.*

(iii) THE WORKING OF THE DECREE

The greater number of cases which come before the court come under clause 8, giving the right of rescission, and clause 9, dealing with the infliction of disciplinary measures. Of the cases which come before the court, 70 per cent. are settled in the course of preliminary arbitration proceedings. The results of these negotiations are not published, so that it is difficult to appreciate their importance, but it is generally agreed—and in the cases which I personally have witnessed it is certainly the case—that the arbitrator is extremely careful of the cartel's interests and not inclined to leniency to the rescinding member. To these proceedings must be attributed the salutary working of the decree: cases only reach the court when disagreement between the cartel and its members is extremely serious.

The court itself has also interpreted the provisions granting rescission very strictly. In the course of its working, it has endeavoured to maintain the validity of the cartel contract unless a direct causal connection between injury to the members and cartel policy can be proved, establishing the following principles:

- I. Grounds for rescission do not exist if the suggested ground existed at or before the time of cartel formation, or after rescission.

II. 12.24, 26.4.24, 14.5.25.

* The 1930 crisis stimulated another futile and haphazard attempt to reduce cartel prices. The government was given special emergency powers of intervention in public finances and among these was the power to declare null any price fixing contracts. On this occasion the attempt had no result, since the law provided that the government before taking action must consult the Economic Council (in addition to the business circles involved). The Council presented a memorandum asserting that the figures showing the great divergence in the levels of free and regulated prices required closer examination, with the result of postponing any action.

If the suggested injury could be avoided by use of the cartel's constitution, no ground exists.

19.9.25, 21.8.25, 15.5.25.

No right of rescission exists :

- (1) If the cartel refuses to extend or strengthen its original contact.

2.2.25.
 - (2) If a hindrance to members' business takes place as a result of a restriction containing possibilities which could be recognised at the time of cartel formation.

16.3.25.
 - (3) If a member is fined or boycotted for breaking price regulations.

21.4.25, 9.5.25.
 - (4) If discipline is relaxed as result of transition to another currency standard.
2. A ground for rescission exists if the cartel has broken its own agreement, for instance :
- (1) If the cartel has made agreements which go outside its scope as a condition and price cartel.

1.9.24.
 - (2) Or if it discriminates against its members who are also members of a third association (an employers' organisation in this case).

1.9.24.
 - (3) If it makes agreements which favour certain groups of producers.

10.11.24.
3. The principal ground for rescission is danger to the economic existence of the member. Such danger exists :
- (1) If the member is forced, in order to find a market, to join another association and as a result incurs an economically injurious punishment from the first cartel.

8.9.24.
 - (2) If the terms and prices fixed by the cartel are such that a member whose customers are particularly weak cannot sell his goods if he remains in the cartel in which he has a certain special position.

16.1.24.
 - (3) If a member, *qua* member of the cartel, cannot obtain raw material which he could obtain if not a member.

16.10.24.
 - (4) If the number has on the basis of a previous agreement calculated on obtaining a greater supply of raw material.

Further, if the member's economic existence is endangered certain generally accepted rules are modified. Such are :

- (1) The rule that if the rescinding member recognised the nature of his position on joining the cartel, that his position is no ground for rescission.
17.5.24, 30.2.24.
 - (2) That price decisions in general are no ground for withdrawal.
7.1.25.
4. A mere change of circumstances is not a ground for rescission.
- (1) If the member of the cartel has derived benefits from membership during an industrial revival, disadvantages due to the revival are not a ground.
16.1.24.
 - (2) If the member's economic distress is only temporary.
2.4.24.
 - (3) If opposed parties develop within the cartel.
3.3.24, 30.1.24, 17.1.24.
- If a new grouping of interests or concern arises within the cartel, and the weaker members have received compensation in the form of increased voting power.
5.2.25, 2.2.25.
5. A ground for rescission exists, if a *fundamental* change of circumstances has taken place, even if the cartel has in vain attempted to adapt itself to the change.
Such fundamental changes are held to be :
- (1) Multiplication of outsiders.
14.1.25, 11.2.25, 7.1.25, 7.4.25, 11.2.24.
 - (2) If the structure of the cartel is so altered that the member's obligations are out of proportion to the protection afforded by the cartel.
13.2.24.
- Or if the cartel cannot fulfil its obligations as result of change in general economic conditions.
23.5.24, 9.2.25.
- (3) If the cartel has attempted to adapt itself unsuccessfully to new circumstances, a right of rescission exists if the adaption disregard the interests of the weaker members.
16.1.24, 17.5.24, 7.1.25.

However, all these decisions assume that the cartel has not adapted itself to the change : if it has done so, no ground for rescission exists.

- (1) If in depression the cartel has left its members sufficient economic freedom to alter prices and conditions.
- (2) Or permitted competitive prices, either formally or actually.

13.2.24.

15.3.24.

So far it has established positive principles, the court has cautiously followed the example of the American tribunal, condemning discriminating rebates and other unfair competition devices.

(iv) PROPOSALS FOR REFORM

Obviously the present state of the law is unsatisfactory. Its defects are obvious—the concentration on the cartel contract, the weakening of the already weaker cartels, the possibility of administrative action without expert advice. Its effects have been purely negative: there is not the least reason to suppose that any recent rationalising activity in the engineering branches, for example, is in any way due to its influence; nor does the fear of legal proceedings seem to deter cartels from any activity that seems good to them—for instance, although the court in 1927 condemned the steel syndicate's use of discriminating rebates, the cement and scrap iron cartels continued to use them quite blatantly. Such salutary influence could not be expected of a law based on the alliance of chaotic economic conditions and "obsolete prejudice."

Reform could take one of two courses, with the object of bringing the decree into harmony with the doctrine that combines ought to be controlled. Either the cartel court ought to be given a means of intervening more drastically and frequently in the cases of deleterious action on the part of trusts, in order to level up the decree's effect with the destructive provisions of clauses 8 and 9, or else these clauses ought to be repealed outright and the court's powers of intervention limited to cases of proved abuse, in order to level down the position of the cartel to that of the trust. Since the time of its promulgation, reform of the first kind has been frequently under discussion in the Reichstag because the initiative in introducing debates has been taken by the Social

Democratic party which retains antipathy to the cartel and trust as one of its favourite party doctrines, and different cabinets have pledged themselves to tighten up the decree's destructive provisions, if not to evolve a new destructive code altogether, at a time when financial circumstances gave great momentum to the combine movement (mid-1926 to mid-1928) and public opinion was carried away by rationalisation as a programme for all and every enterprise, ranging from the Civil Service to the Berlin opera.

The decree did not, however, play a big enough part in the Social Democratic party's programme to necessitate immediate reform and proposals were repeatedly postponed, until, in March, 1928, the Government announced its intention of waiting until the light might shine from new data. These were to be, on the one hand, legal opinion as expressed by the Jurists' Conference at Salzburg in August, 1928—the first discussion since 1906—and the facts of industrial organisation provided by the reports of the *Enquête Ausschuss*. The government had of course no guarantee that the recommendations of the experts could be harmonised; but fortunately, though their results do not provide a definite programme, they agree with each other sufficiently well to give a general direction to state policy, on grounds of expediency, omitting general principles.

To summarise, then, the basis of future policy, the *Enquête's* reports, covering a hitherto officially unexplored field, the cartels of the finishing and building material industries,* disclose no grave abuses of organisation, though the examination is very searching. Consumers usually approve the policies of the organisations with which they have to deal and rarely complain: the few complaints made are usually unjustifiable. Enquiry as to the existence of monopoly is in most cases irrelevant. On the other hand, few cartels can claim to have "rationalised" production, though many have made attempts. The reports impress because they reveal the immense variety of cartel activities

* Ausschuss zur Untersuchung. *Verhandlungen und Berichte*, III Arbeitsgruppe, *Entwicklungslinien der industriellen und gewerblichen Kartellierung* II Teil, Band I, *Maschinenbau*, Band II, *Bau- und Baustoffindustrie*, Band III, *Textilindustrie (Seidenindustrie)* 1928-29.

and functions; the ingenious shifts of each small branch, the spirit moving on the face of the anarchic waters of capitalism, and suggest the folly of general summary of the cartel system, for there is no system, only a multiplicity of causes, methods and problems. No comment is made on the effect of cartel legislation, except in one case in which a machine construction cartel states (probably not in good faith) that it abandoned its attempts to fix prices, being alarmed by the decree; nor are proposals made for reform.

(v) PRACTICAL OBSTACLES TO REFORM

It is, however, in the sphere of company law that the Enquête's enquiries are most illuminating.* If measures to deal with recent developments of the combine movement are necessary, they should be concerned with the revision of company law rather than the law of contract, for if the state must exert itself to deal with monopolies, this is the only possible surface for attack on the trust. The memoranda supplied by jurists to the committee reveal the utter havoc to which concern formation has reduced the provisions of the civil code. The law imposes literally no hindrance to concern (as distinct from trust) formation, which, by obscuring the resources of the holding and subsidiary companies, issuing shares with multiple voting right, concealing the accumulation of reserves, introduces practices wholly contrary to the spirit of the law, prevention of which would be the basis of any attempt at state control. Financial publicity is the first requirement; no court can in every case of alleged injurious monopoly undertake an exhaustive enquiry, so long as it is impossible to establish the existence of excessive profits.

The committee itself makes no recommendations, and does not contemplate any plan for giving the larger concerns a special status, like that suggested in the Balfour Committee's Final Report,† realising even if evasion was somehow prevented, the evil is not confined to the large concerns alone; reform can mean nothing less than re-codification.

* Ausschuss zur Untersuchung, III Arbeitsgruppe, I Band, *Wandlungen in den Organisationsformen*, 1928.

† Report, p. 190.

To appreciate the point it is only necessary to take one of these practices, the plural voting share, which made its appearance on a large scale during the inflation period. Such shares were created because so long as the market value of shares did not correspond to their real value, all large concerns feared acquisition by foreign capital. After stabilisation, when the genuine need for such measures passed away, the practice of issuing such shares continued because concerns found it a convenient method of retaining control over their subsidiary companies (though the issue of such shares did not increase in proportion to the enormous capital issues of 1926). The official share company statistics indicate its extent, though they only include 12 per cent. of the total number of companies, and 62 per cent. of the total share capital. In 1927 of the total 1,499 companies (nominal capital 13 Milliard RM.), 742 (nominal capital 6.6 Milliard RM.) issued such shares. The point is, of course, not the value of shares issued but their distribution; in 1927 such shares controlled over 40 per cent. of the voting rights in the case of 240 companies, over 50 per cent. in the case of forty-six; in most cases the nominal value of the controlling shares did not amount to more than 10 per cent. of the paid-up capital. The larger companies, as might have been expected, have issued a larger proportion (in relation to the number of companies without such shares) than the smaller companies; the proportion of voting right controlled by the over 10 Million RM. capital class has increased compared with the other classes since 1925, as a result of the Farben-Industrie issues. The figures, however, do not reflect the actual extent of minority control, because shares with the effect of multiple voting right can be issued without bearing multiple voting right as such—for instance, the Siemens concern in its recent conversion to a share company issued 90 Million RM. ordinary shares in 1,000 mark shares, and 30 Million RM. preference shares, each 200 M. share carrying one vote, so that 1,000 RM. of the Preference carried five votes and 1,000 RM. of the ordinary, one; mere prohibition of the plural voting share as such would be futile. For the trust movement the practice has great importance

since it enables a minority to exclude the majority from control; the I.G. Farben-Industrie has by this means made reticence a fine art. Further, it enables a trust to control its subsidiary companies with the minimum of capital. On the other hand, it can be used as a weapon against trust formation, as it was used by many companies in the inflation period to avoid acquisition by voracious concerns like Stinnes, Michael and Herzfeld, by the Rheinische Braunkohlen to avoid acquisition by Petschek, Thyssen or Stinnes, and more recently by the Mannesmann Tube Works against the steel trust. If it is argued in favour of the practice that in most cases ordinary shareholders exercise no influence on the management, it does not follow that they should be legally excluded from the possibility of such control. The economic danger lies not in the theoretical injury to the principle of plutocratic control, but in the assistance to excessive investment of profits in the concern, a malady incidental enough to the Rhenish-Westphalian industry without legal aid. Yet legal reform cannot be advocated on that ground; "excessive investment" injures no definite person, nor yet the public interest as legally definable, for what is over-investment under some circumstances is rationalisation of plant under others. Every definite proposal for adjustment of company law to present economic conditions ends in this sort of impasse; the Enquête's report gives no positive advice.

The jurists' conference occupied itself with the question of present cartel legislation only, and was therefore able to produce with remarkable unanimity a coherent scheme amounting to a complete revision of the existing law. It decided, unlike its predecessor of twenty-six years before, that state control of some kind is necessary, but refused, on purely legal grounds, to give a special status to market regulating associations as such. Naturally economic arguments could not be ignored—Dr. Isay, for instance, supported his views by stating that cartels are the only safeguard against trustification, but quite properly the legal objection to the decree was emphasised; German private law recognises no "restraint of trade" doctrine; freedom of trade to it

only means freedom from state interference, not from limitations self-imposed by contracts. The conference therefore recommended the abolition of special jurisdiction, the cartel court. The civil law disputes, i.e., those now coming under clauses 8 and 9, should be dealt with by the ordinary courts, the "public interest" cases, i.e., those now coming before the court under clauses 10 and 12, by the Reichswirtschaftsminister and an advisory board of experts, while the defendant shall have a right of appeal to the Federal Administrative Court. These reforms will necessitate repeal of clauses 9, 10 and 12, and alteration of clause 8 (incidentally the repeal of clause 9 which requires the court's approval for disciplinary action will restore to cartels their disciplinary powers). This adjustment would not be merely formal: by removing the legal anomaly of special jurisdiction, it removes the stigma attaching to the cartel contract. It does not in any way diminish the possibilities of state intervention, for the Minister will have precisely the same power of dissolving contracts and prohibiting activities, but he will be advised by economic experts, and there will be a right of appeal. The eighth clause is left in essentials intact, because it is held that the right of rescission, if interpreted on the same strict lines, is a salutary amendment of the common law; in order to guarantee the strict interpretation, Dr. Isay recommended, as a principle to guide to the courts, that they should weigh the disadvantage the withdrawing member would incur by remaining in the cartel against the disadvantage other members would incur by its withdrawal. If Dr. Isay's other recommendation, that the compulsory syndicates should no longer be exempt, had been approved by the conference, the resolution would remove all the obvious defects of the present legislation, on quite straightforward lines, without weakening the state's present powers in the least.

CHAPTER VIII

THE PROBLEM OF THEORETICAL ANALYSIS OF THE COMBINE MOVEMENT

REFORM of the law on these lines would no doubt improve in the present state of affairs, assuming that some sort of a control is a necessity; up to now the validity of this assumption behind the decree has been admitted. The principle of state policy has yet to be defined—and an insuperable obstacle stands in the way—the absence of any standard by which to judge the combine movement. In Germany the favourable attitude of opinion is simply based in the belief that combination represents a concentration of resources without which Europe cannot continue to exist, and has no more theoretical backing than it has in this country. The kind of theoretical analysis whose findings had most influence before the war—for instance that of Liefmann—implicitly condemned the combine movement by treating it as an approach to monopoly. Such treatment is inevitable, if capitalism is conceived to be a self regulated economic system, adjusting efforts to wants by competition between producers and consumers; its proper working must be hindered if a group can exert influence on the market by the mere fact of controlling the whole supply of a commodity. But in the post-war period, as the combine movement spread to branches hitherto unorganised, and the inclusive cartel, composed of a few large amalgamations, established itself as a final form of organisation, it became evident that this treatment needed revision. In 1923 the state (under the pressure of inflation conditions and without due consideration) passed a measure creating a special combine code, subjecting certain types of contract to special regulation. It was therefore natural that discussion of the combine problem should concern itself particularly with the exact scope of the

law, and the demand for revision of the pre-war attitude (in the press and semi-scientific periodicals in 1926-27) therefore often concerned itself solely with the Liefmann definition of the cartel, a criticism which goes much deeper than a mere demand for re-classification. The chief authorities on the subject, Drs. Isay, Lehnich and von Beckerath, unite in rejecting the Liefmann definition, on the ground that the treatment of monopoly as the aim of all producers' combines, measuring their effectiveness by their degree of approach to it, perverts the analysis of industrial organisation in that it conceals dissimilarities and ignores resemblances.

It conceals dissimilarities; the famous definition of the cartel as "an association between undertakings of the same kind which remain independent, whose object is the monopolistic domination of the market" is misleading, because it is admitted that the trust is in essence identical, except that the undertakings do not remain independent. This assimilation of trusts to cartels ignores an important difference in aim, that of the trust being independence of the market, that of the cartel, market control; the trust studies the possibilities of recognising industry in order to adjust costs to prices, the cartel studies market conditions in order to adjust prices to costs. It ignores resemblances; for the definition excludes the "calculation," "condition" and specialisation cartels prevalent in the German engineering and textile branches, which never advance to a higher degree of organisation, yet in fact there is no great gulf fixed between the cartel which regulates prices and the cartel which regulates terms. In 1927 Professor von Beckerath and Dr. Tschierschky carried on an interesting controversy on this point, the former arguing that the typical post-war cartel is essentially different from the typical cartel of the 90's, supporting the argument by emphasising the prevalence of these conditions, calculation and specialisation cartels, to which Dr. Tschierschky replied, that after a study of hundreds of cartel contracts, constitutions and activities, he was convinced that the old type restricting output, raising prices, crushing outsiders, still flourished. In fact both are right: some branches are dominated by

the older type (which was never typical, even in the 90's), others by the new, and many cartels perform the functions of both types. At any rate a definition of "cartel" ought to include both and show their fundamental similarity; hence Dr. Isay defines it as "an association of independent undertakings, which enforces obligations as to the treatment of output, market, purchase, price calculation or trade terms and therefore serve to influence the market against the working of free competition," including, that is, any association which introduced an element of conscious direction into the conduct of an industry. The same element is introduced by the trust, though its members do not remain independent, and though it seeks less to influence the market than to render itself independent of it; and by the common amorphous entity, the concern, which from this standpoint is to be regarded as a humble relation, not as a trust *manqu *, as it must be if monopoly is the essence of the trust. If the combine has an aim other than the achievement of monopoly, the introduction of conscious direction, monopoly appears to be an incidental, if gratifying result of combination in certain branches. Thus the line of criticism simply denies the existence of a *prima facie* case for monopoly and asserts the existence of a *prima facie* case for stabilisation.

Although apparently concerned merely with terminology, there lies behind it a criticism of the type of analysis commonly called orthodox.* So long as currency and banking operations were regulated by the gold supply, so long as inter-firm competition was the rule rather than the exception, the type of analysis which regarded capitalism as market-regulated—and therefore consumer-controlled-system—was not so wide of the mark. It was obliged, it is true, to dismiss important phenomena as friction; yet the laws it expounded certainly worked. But when currency and banking operations, the supply of labour and capital to the entrepreneur, the entrepreneur's own activity are consciously directed, there can be no analysis on

* Orthodox in the British sense. The type of economic theory described as orthodox in this country, the analysis of the economic system with the aid of a general law of value based on the utility principle working through the consumer, was never generally accepted.

the old lines ; there are too many unknowns. The motive power of the old system itself cannot be treated as friction, yet any theory which analyses the capitalist system with the assistance of a general law of value is obliged to regard the combination movement as doing nothing more than affecting the surfaces of friction ; it must base its final judgment on the extent to which increases in some relation offset reduction in others. Even if such effects admitted of quantitative measurement, they could not be compared, because this type of theory can only calculate the effects of trustification by taking one effect at a time. That is, the effect of cartel policy on prices can be estimated, if it is assumed, among other things, that the prices of the other commodities are fixed by the laws of competition, that the industry's supply curve is a straight line, that the flow of capital to the industry is not affected by banking policy or by accumulation of reserves in the industry itself, a futile method of approach, because the combine movement does not affect the competitive system externally in a given relation. " Late " or " managed " capitalism cannot be analysed as if it were a market regulated system ; the combine takes over the risk-bearing function from the commodity and capital markets at once, and neither market can be treated as if it alone were affected while the other continued to operate normally. Such analysis of the combine movement not only fails to give the historical facts their value, slurring over the vital differences between the capitalism of the nineteenth century and that of our own time, but misapprehends the economic significance as well. A theory which treats capitalism as a system tending towards a position of equilibrium self-regulated through the adjustment of costs and utilities through the market, cannot see the necessity of stabilisation or conscious direction ; it can only regard a system with credit controlled and industry combined as " organisierte Unwirtschaftlichkeit." If such theory is combined with appreciation of the possibilities of mal-adjustment in the economic system, the logical consequence is the fifty-fifty attitude (expressed very clearly in the memoranda for the 1927 international economic conference, particularly those

of Hirsch and Cassel) regarding state interference with the activities of the combine as at once dangerous, necessary and impossible.

If it is desired to give proper importance to the stabilising influence of the combine, it is necessary to emphasise the factors responsible for mal-adjustment—requirements of industrial technique and structure, inequality of incomes—that is, to turn to some type of theory which emphasises the importance of entrepreneur direction as the motive power of the economic system, the type which is commonly called dynamic,* since it is occupied with the phenomena of unstable economic progress rather than with the running of a self-adjusting system. A theory which puts the entrepreneur spirit in the forefront of its analysis can allow that a change in the character of this spirit changes the character of this system; it can emphasise the contingent and transitory character of capitalism as orthodox theory cannot. Actually orthodox theory frequently draws on the conception of capitalism as a phase merging into socialism via trustification, a conception which became common property once Marx had taken the step of considering capitalism as a peculiar historical phenomenon; yet logically the conception is inadmissible for analysis which treats dynamic elements as friction.

Of such theories, that of Schumpeter has incontestably the greatest influence at the present time, owing to its complete and systematic character. Apart from the general theory of economic development, it does not provide any special doctrine as to the economic significance of the growth of trusts. The most valuable positive contribution is its criticism of the anti-combine prejudice based on orthodox theory; it simply dissociates the combine movement from its association with monopoly by denying that there is any reason to identify the competition between producers postulated by economic theory with competition between undertakings in the capitalist state. Its cardinal doctrine—

* This type of theory is of course a method of approach rather than a body of doctrine, practised by theorists of opposing tendencies and conclusions, the historical-sociological like Sombart, the rigidly scientific like Schumpeter, with Marx the unifying influence, in so far as all such theorists emphasise the importance of entrepreneur leadership.

that all profits are temporary monopoly rents arising from the innovation activity of the entrepreneur (on which interest is a tax)—exonerates profits arising from combine policy from any special stigma of exploitation; if trust formation increases the earning power of an industry, the returns are in no way different from those which would result from the stigma of exploitation. This dissociation of combination and monopoly is effected by a new definition of the term static and dynamic; the belief that producers' combinations are necessarily monopolistic arises from consideration of their nature under static conditions, without properly defining these conditions. On the proper sense of the distinction between the static and dynamic tendencies in economic life the whole value of the theory turns. Here the ultimate value of this distinction, and the internal consistency of a theory based upon it, need not be considered, only its bearing on the practical problem. The distinction, Schumpeter holds, must be made not between changing and unchanging states, but between the tendency in the economic system to adapt itself to changes and the tendency working in the same system, to generate changes itself. An economic system is static—not stationary—when the element of innovation—entrepreneur activity—is absent.

Using this distinction it should argue (the argument is not definitely put forward) as follows: that in the non-developing state which assumes no differences of industrial structure and equal elasticity of demand for all products, monopolistic competition is impossible; if producers combine to raise the price of their product, there is nothing to prevent other producers from being attracted to the branch and under-selling the combine, or demand from falling off or finding substitutes. A producers' combine, if it could exist, would be pernicious because it would direct the flow of resources into channels which it would not otherwise take. But the static state in Schumpeter's sense does not preclude the possibility of previous capital investment, only the possibility of investment in the future. The static tendencies can be conceived as working under given conditions, in an unalterable framework of fixed capital. If it is admitted

that there has been previous capital investment, commodities must be divided into production and consumption goods, and there are therefore differences in industrial structure and elasticities of demand. Combinations controlling prices are then possible because an industry which owns supplies of raw material can control the market in which it sells its product because it can control its costs—it can check the *Kreislauf* at one point because it is naturally checked in another. Further, if its scale of output must be large owing to high overhead costs, it can combine because the size of the unit of production checks the arising of outsiders. But industries of this kind are, as a rule, the basic industries; the stimulus to combination given by their peculiar structure is counteracted by their peculiar position in the industrial body, which gives their product a degree of elasticity generally higher than that of a manufactured article or consumption good. A combination with absolute monopolistic power can only exist if high capital costs (not necessarily implying that costs per unit decrease as volume of output increases), control of raw material, and inelastic demand, are combined. But if the state is genuinely static—if, that is, there are no possibilities of development, the monopoly is only temporarily possible. For if in this state the basic industry producers' combination raises prices to the point where monopoly returns are maximised, or to any point higher than competitive conditions would permit, its success will be its own undoing. Profits accumulate and are invested in the branch in which, *ex hypothesi*, returns are greater than in any other, until expansion necessitates a reduction of price or investment in other branches, i.e. the manufacturing industries, whose earning power is further reduced owing to the high price they are paying for the products of the monopolised branch. The tendency to disruption will act immediately,* taking the form of a struggle for higher quotas

* Lederer, *Monopole und Konjunktur*. Special memorandum, *Vierteljahrshefte zur Konjunkturforschung*, 1927, suggests that the Rhenish-Westphalian heavy industry combines have not manifested the disruptive tendency as yet because their price policies have not been extortionate. When a concrete example is taken the assumption of a static state is of course abandoned.

by members of a cartel, of acquisition of miscellaneous interests in the case of a trust. For the short period of its existence, the combine is of course wholly pernicious, stimulating excessive investment in its own branch.

It is here that the theory encounters a fundamental difficulty, the possibility of allowing the assumption of a non-developing state with structural differences between industries. The working of the equilibrium tendencies may legitimately suppose previous capital investment, in general, but the static state must be a state without capital in the book-keeping sense—disposable resources for innovation investment. But if there has been previous investment in certain branches, surpluses (however described) have been accruing to individuals in those branches and are available for further expansion. If capital investment is to be admitted at all, there must be possibilities of development.* The theory should therefore conclude that the effects of combination cannot be studied under static conditions.

Under dynamic conditions combination is treated as one manifestation of the force responsible for all disturbances of entrepreneur activity (innovation), carried through by means of the credit mechanism. Innovation in this sense includes not only the introduction of new processes and products and the discovery of new markets, but also the formation of new organisations and the dissolution of old. Cartellisation and trustification are therefore both included in it, and an industry which makes use of these tools to improve its

* Pigou in *Archiv für Sozialwissenschaft*, 1927, argues that a producers' combination, assuming a stable general price level, constant costs and constant demand, could exercise a stabilising function, because in competitive conditions orders are placed sometimes with one producer, sometimes with another, which necessitates maintenance of a larger productive apparatus than would be necessary if orders were evenly distributed by the association. The argument provides a good illustration of the confusion of analysis without the static dynamic distinction. He includes all the assumptions of a genuine static state, while omitting the vital assumption—no capital investment. The same argument is used, in a different connection in *Industrial Fluctuations* (p. 171): "On the assumption that the curves of demand and supply are straight lines, it is easily shown that the output proper to monopoly is always one half of that proper to simple competition." The Schumpeter distinction would point out that in any industry in which monopoly is possible the supply curve can never be a straight line, and that there can therefore be no calculation of the output proper to monopoly.

earning capacity does not exploit the consumer any more than it would by improving its works organisation or introducing a new technical process. There is therefore no problem of trust regulation.

It is at this point that the theory seems to lose its practical value. On the basis of the static dynamic distinction (in Schumpeter's sense) the German post-war combination movement demands a differentiation between the function of combines in old and new industries. The type of trust against which American legislation was directed, formed with the express purpose of monopolising the supply of a commodity with an expanding market, has rarely, if ever, appeared in Germany. New and expanding branches did not always combine and rarely monopolised. Coal, iron and steel syndicates were formed when the first wave of expansion was checked; in lignite mining (up till a year or two ago an industry with an expanding market) no effective cartel organisation exists in the East Elbe and Central German districts, while it is universally admitted that the Rheinland syndicate has only steadied prices and permitted regular expansion; the chemicals branch, wrongly described as monopolised before the war, deliberately rejected Duisberg's combine plan in 1904, accepting it in 1926 when restriction was necessary; in artificial silk market control has only spasmodically been achieved. The greater number of trusts and cartels originated in depression for the purpose of adjusting capacity to market conditions, with the object, not of increasing the rate of return but of maintaining the existing rate. In these circumstances the formation of a combine does not represent exercise of entrepreneur activity of the same kind as in the case of an industry with an expanding market.

Such combines cannot be classified by the Schumpeter theory. Innovation in the accepted sense is not likely to be accompanied by a re-grouping of producers. Capital invested in a new industry brings in a higher return, which is, on Schumpeter's theory, monopoly revenue arising from the scarcity of the product; prices are for a time divorced from costs of production, whether a producers' association exists or not: monopoly attaches to the innovation, not to the

combination. An association can, of course, raise prices to a level above that which competitive conditions would permit, since the tendency to disruption will not act quickly as in the static state, owing to the possibility of prolonged investment in a new branch. But it is not likely to use its power to raise prices, since the demand for any new product shows a high degree of elasticity. When the high profits attaching to the actual innovation cease, producers, unprepared to face a fall in the level of profits, combine in order to maintain their natural monopoly. The returns may then be either real profit due to the new constellation of interests, or a quasi rent due to the existence of an established monopoly. It cannot be classified as either innovation or adjustment. Obviously from the standpoint of the general economic interest it is of the utmost importance to decide which it is, since if it is innovation, it is implied that the combine can obtain a higher rate of return by the mere fact of its inclusive character, if it is adaptation, it is implied that the combine can only subsist by re-organisation of production thorough enough to preclude the possibility of under-selling, since under a cartel agreement any individual firm can earn higher profits by exceeding its output quota and underselling.

The same difficulty arises when the trust problem is considered in relation to general business fluctuations. According to Schumpeter, changes in the business situation are generated (not merely accompanied) by periodical waves of entrepreneur activity. The trade cycle represents a transition from one state of economic equilibrium to another, revival marking the introduction of the change, depression the "Statisierung," an approach to a non-developing state.* The natural sequence of events, if this explanation of the cycle is accepted, would be trust formation early in revival, price increases, excessive investment in the trustified branch, and dissolution after the crisis. In fact it would be possible to instance numbers of plans for cartels or trust formation made in depression and abandoned when revival set in. The cartels of the pre-war period were notoriously "Kinder der Not," though they often broke up after the crisis under pressure

* Cf. *Theorie der wirtschaftlichen Entwicklung*, 1926 edition, p. 234.

of rising overhead-costs. But neither then nor in the past few years have the heavy industry cartels exploited their position in the revival, for the reason that revival put them into a relatively much more favourable position than that of the finishing branches, since they own their raw material and their total costs of production do not increase, while costs per unit decrease rapidly with the greater volume of output, and they have therefore no incentive to raise prices. On the contrary they claim to stabilise the level of profits,* in their own branch.

Since in Schumpeter's view all profit is monopolistic return, this policy is unintelligible, for it assumes a belief in a normal rate. Stabilising policy cannot be justified theoretically. Nor, of course, can the suggestion† that the combine should use its influence to stabilise general business conditions receive any support from the theory. If the combine aims at stabilisation of general conditions, the proper course would be full exploitation of its position by advancing prices early in depression to check expansion in the finishing branches. But since instability is the essence of the capitalist system, conscious attempts at stabilisation indicate the approach to a new order of economic life, the implications of which are not discussed. Thus the theory has as little guidance to offer as orthodox theory has. It denies the *prima facie* case for stabilisation as well as for monopoly, under present conditions. It has one advantage over orthodox theory, in that it can give the trust movement greater significance. If the beginnings of the movement are treated ambiguously, it is because the theory conceives of capitalism as an unstable and partially chaotic system, with the unaccountable

* The question as to whether this should be done by stabilising output or prices, since stabilising one means destabilising the other, only arises if average costs can be reduced both by steadier output and larger output. In the Rhenish-Westphalian heavy industry the level of over-head costs is so high that the cartels unhesitatingly attempt to stabilise prices.

† Made, among others, by Wiedenfeld, in a memorandum for the 1927 economic conference. The difficulties of deciding the date and the amount of the increase seem insuperable; either the price rise would be insufficient to check demand, and the combine would earn higher returns, would over-invest and subsequently intensify the fluctuation; or it would raise prices too high, hasten the coming of the crisis and prolong the depression. Cf. Lederer, *Monopole und Konjunktur*, 1927.

entrepreneur spirit as its motive power. Trustification, by modifying and transmuting the spirit, alters the system itself. Trustified capitalism differs as much from capitalism with inter-enterprise competition as the latter differs from the abstract static state with competition between producers. The significance of the trust movement is to be sought, not in the stabilising effects on trusts, but in the effects of self-finance on the genesis of new industries.*

The deficiency of orthodox theory is supplied at the cost of practical bearing. For theory like Schumpeter's, which attempts to treat the dynamic element and maladjustments as problems within their own right, putting the entrepreneur spirit in the forefront of its analysis, making its whole interpretation depend on the working of this spirit, must forego the ultimate standard—the satisfaction of wants—by which any economic system is judged. It is impossible to give full value to the phenomena described as friction—the special technique and structure of the new industries, the policies animating the directors of the central banks, the combined entrepreneurs and labour leaders—and calculate the effect of their interactions, and at the same time to consider the working of the economic system in the light of a general law of value and a standard of economic progress. All that the theory does is dissolve the union of continental liberalism and economic theory from which the anti-trust prejudice arose.

If German public opinion can find no coherent principle to assist it in the revision of cartel legislation (universally recognised as necessary), it is not due to a mere difference of opinion among economists, but to a much deeper opposition between two methods of approach, both of which are indispensable to an understanding of the combine problem, yet which cannot be combined. Behind their opposition lies the theoretical antimony between theory which treats the dynamic elements as friction and

* A development very noticeable in Germany, where the new industries, financed in this country by speculative issues for the most part, have been founded by the powerful coal and chemical groups separately or together. Coal distillation, synthetic nitrates, artificial silk have undoubtedly benefited by this method of growth. Cf. Chap. VI. (ii).

theory, which, in giving the dynamic forces their proper treatment, loses all general principle. So long as it persists there can be no consistent attitude to the combine movement. At present the two methods of approach are roughly equal in their influence on academic thought. It is possible* to observe a revival of anti-combine doctrine in the past year or two, which represents a reaction from the tendency to extol the economic advantages of the trust which has worked strongly for four or five years, not a genuine change in opinion.

The refinements of economic theory do not concern state policy; it only needs to find some rough but generally accepted test of what constitutes injurious action. But such a test is not available so long as there is no generally recognised method of approach in economic theory and therefore no doctrine of what is desirable. It is not merely that absence of information stands in the way; even if the combines conducted their activities in the light of complete publicity, still it would be impossible for the state to systematise its interventions. It is not that capitalism has outrun democracy, but that democracy has no means of deciding what capitalism involves.

* e.g., Bente, *Organisierte Unwirtschaftlichkeit*, 1929, and Weber, *Ende des Kapitalismus?* 1929.

APPENDIX I

STRUCTURAL CHANGES IN THE HEAVY INDUSTRIES AFFECTING COMBINATION

I. INCREASE IN SIZE OF COAL UNDERTAKINGS

Up till 1924 official statistics did not define establishment or undertaking, sometimes using the term "Werke," meaning one undertaking with all its shafts, sometimes one shaft: in that year classification on the latter basis was introduced. In the following table this classification has been used for the 1900 results: the 1913 figures are not comparable as they are based on the former classification.

No. of Independent "Werke."

Output.	1900.		1924.		1927.	
	No.	Output.	No.	Output.	No.	Output.
Under 1,000 tons	15	34,594	25	73,087	13	19,000
10-100 thousand	20	1,086,567	19	1,125,843	9	475,530
100-500 thousand	155	43,306,347	153	46,285,091	81	30,675,971
500 thousand - 1 million	24	15,689,870	64	43,436,869	99	68,790,634
Over 1 million	—	—	3	3,206,840	14	18,060,951
Total		60,119,378	264	94,127,750	216	118,022,086

Percentage of Total Output.

	1900.	1924.	1927.
Under 1,000 tons	0.07	0.07	0.02
10-100 thousand	1.95	1.20	0.40
100-500 thousand	70.75	49.17	26.00
500 thousand-1 million ..	27.23	46.15	58.28
Over 1 million	—	3.41	15.30

	Plant Mill. RM. 1913.	Coal Output Mill. tons. 1913.	Coke Output Mill. tons. 1913.	Plant Mill. RM. 1926.	Coal O. Mill. tons. 1926.	Coke O. Mill. tons. 1926.	Depre- ciation Mill. RM. 1926.	Balance Sheet Profit Mill. RM. 1926.
Adler	—	—	—	6.976	0.991	—	0.432	0.409
Concordia	—	—	—	31.132	1.545	0.285	5.360	0.117
Constantin	35.289	2.801	0.808	30.499	2.611	0.719	1.735	—
Dahlbusch	13.171	1.206	0.152	13.733	1.070	0.126	1.680	1.278
Diergardt	15.003	0.491	—	11.520	0.712	—	0.400	0.550
König Wilhelm	23.116	1.191	0.402	24.707	1.074	0.226	0.949	1.303
Essener Steinkohlen	35.380	2.629	—	50.568	3.523	0.254	2.815	4.445
Friedrich Heinrich	40.705	0.468	0.146	19.341	1.399	0.572	0.976	2.612
Harpen	139.184	8.626	1.632	93.730	7.943	1.333	17.617	7.192
Hibernia	103.145	5.698	0.716	58.661	5.088	0.709	5.253	2.804
Klöckner	30.000	1.859	0.855	71.223	3.972	0.829	3.053	—
Köln-Neussen	13.042	1.949	0.315	57.481	2.623	0.455	4.007	—
König Ludwig	33.603	1.433	0.472	31.567	1.421	0.345	1.314	1.974
Langenbrahm	15.966	0.766	—	12.558	0.776	—	0.531	1.776
Lothringen	—	—	—	76.180	1.345	0.364	3.863	2.151
Magdeburg Bergw.	2.947	0.584	—	10.598	0.542	—	0.347	0.144
Mülheim Bergw.	18.515	1.485	0.076	8.561	1.386	0.058	0.619	0.695
Niederrhein Bergw.	—	—	—	8.878	0.458	—	0.405	0.17
Recklinghausen	—	—	—	37.904	4.687	0.921	3.150	3.478
Westfalen	—	—	—	15.306	0.792	0.163	1.000	0.21
Total	519.066	31.186	5.574	671.123	43.958	7.359	55.506	30.636
Value of Plant per ton coal output	16.64			15.27				

Defining the undertaking as the concern, the increase in size can only be indicated roughly by pointing out that when the syndicate was formed in 1893 it had ninety-eight members, and when the new contract was signed in 1925, fifty-seven. At the foundation the Harpen mine had the highest output capacity with three million tons per annum; now the highest capacity is ten million tons (Gelsenkirchen) and ten concerns exceed the three million ton figure; the smaller undertakings, however, have not closed down; thirty-seven members of the syndicate have quotas under 1.6 mill. tons. The increase in size is due partly to expansion in the northern limits of the coal field, where shafts must be deeper and capital therefore larger, partly to the causes mentioned in the section on iron and steel.

II. EFFECTS OF THE LOSS OF LORRAINE ON THE STEEL INDUSTRY.

Before the war Lorraine and Luxemburg supplied the Ruhr blast furnaces with ore, and in their own blast furnaces made pig iron for the Ruhr rolling mills; in return the Ruhr sent coal, coke and finished steel products to Lorraine and Luxemburg. Ruhr mine-owners owned blast furnaces and ore mines in Lorraine, Lorraine ore mine-owners owned rolling mills in the Ruhr; each district was so necessary to the existence of the other that the two branches were considered members of one economic system, the heavy industry of the Continent. The treaty destroyed the system. Lorraine had to rely on compulsory coal deliveries, and had to build steel works to finish her pig iron; the Ruhr had to build blast furnaces and find alternative supplies of ore.

The tables illustrate the completeness of the destruction of the system, and the Ruhr's recovery.

Receipt of Coal, Iron and Steel in Rhineland-Westphalia from Lorraine, Luxemburg, Saar and France.

Metric tons.

	1913.	1925.
Pig Iron	1,015,460	17,849
Semi-finished	536,626	132,226
Rolling Mill Products	461,234	88,482
Apparatus	4,374	3,522
Scrap	219,164	25,637
Ore	3,913,777	682,138
Coal and Coke	480,209	226,281
Total	6,630,844	1,176,135

Deliveries of Coal, Iron and Steel from Rhineland-Westphalia to Lorraine, Luxemburg, Saar and France.

Metric tons.

	1913.	1925.
Pig Iron	179,347	21,168
Semi-finished	52,558	233
Rolling Mill Products	145,461	11,370
Apparatus	28,922	4,573
Scrap	4,387	4,633
Ore	5,574	1,965
Coal and Coke	9,381,459	6,375,365
Total	9,797,708	6,419,307

German Iron and Steel Production.

1,000 Metric tons.

	Pig Iron.		Ingot Steel.		*Rolling Mill Products.	
	1913.	1925.	1913.	1925.	1913.	1925.
Rheinland-Westphalia	8,209	8,000	10,112	9,895	9,181	8,161
Siegerland	995	581	388	285	446	451
Saar	1,371	—	2,080	—	1,652	—
Lorraine and Luxemburg	6,418	—	3,623	—	3,033	—
N., E., and C. Germany	1,001	1,050	1,072	1,432	917	1,143
South Germany	320	257	253	215	191	204
Silesia	995	289	1,407	366	1,279	287
Total: pre-war area	19,309	—	18,935	—	16,699	—
Total: post-war area	10,907	10,177	12,236	12,193	11,005	10,246

1909-13.	Pig Iron.	Ingot Steel.	*Rolling Mill Products.	
Average Annual Production (post-war area)	9,240	—	—	11,005
1913	10,907	12,236	—	9,520
1924	—	—	—	—
1925	10,177	12,193	10,426	9,308
1926	9,644	12,342	—	9,017
1927	13,103	16,305	—	—

* Includes rails, sleepers, and fish plates, girders, steel bars, loops and strips, rolled wire, sheets and plates, tin plates, tubes, axles and wheels, forgings and other finished steel.

(1) The first most obvious consequence of the loss of Lorraine is a greater output of ingot steel in relation to pig iron, as a result of the Ruhr taking over the production of semi-finished goods which were produced in the minette area. The Ruhr district has increased its surplus production of ingot steel from 9 per cent. to 17 per cent., although the Empire is now a minus area for ingot steel.

	Ingot Steel in % of Pig Iron.		Rolling Mill Products in % of Ingot Steel.	
	1913.	1925.	1913.	1925.
Rheinland-Westphalia ..	123	126	91	83
Siegerland	39	49	115	158
Saar	152	—	79	—
Lorraine and Luxemburg	56	—	84	—
N., E. and C. Germany ..	107	136	86	79
South Germany	79	84	75	95
Silesia	141	127	91	78

(2) It might be expected that the loss of Lorraine would have necessitated a much larger import of ore. Under the treaty Germany lost 79.7 per cent. of her average annual ore output in the years 1909-13 (31 million tons with an iron content of 9.4 million tons) leaving her with almost no ore above the U.S. mining standard (45 per cent. Fe), for there are no rich ores and so-called middle grade ores (40-55 per cent.) are only found in small quantities in the Siegerland, the valley of the Lahn and Dill (Hesse) and the Harz foreland. What deposits are left (estimated at 474 million tons in 1926 against France's 9,763, U.S.A.'s 4,258, England's 2,929 and Sweden's 1,335) are worked under difficulties, too much quartz in the Siegerland, too much sulphur and phosphorus in the Lahn and Dill, too high mining costs in the Harz. The output of these seams, about 4 million tons per annum (2.5 million tons from Siegerland, 1.5 from the Lahn and Dill and other districts) cannot be increased; in 1927 the home output only provided 13.6 per cent. of the total ore consumed (11.8 per cent. of iron content). The existence of the entire ore mining industry is not economically justifiable. Evidence produced for the Enquête Ausschuss proves that without a subsidy, and allowing a proper depreciation figure, the balance sheets of all firms in the industry would show a loss; even with the subsidy (for half the year) the 1926 balance sheets of eleven of the twenty-seven Siegerland firms showed no profit, and of these eleven, seven in 1927 were still working at a loss; conditions

in other districts are less uniform, but generally speaking are as uneconomic as those of the Siegerland.

This state of affairs is due to the increase in costs, in the Siegerland in 1926, 25 per cent. higher than in 1913, in the Lahn and Dill 37.6 per cent. (exclusive of depreciation) while profits have not increased in proportion, being in the Siegerland 3.7 per cent. higher than in 1913, in the Lahn and Dill 10.8 per cent. higher. Costs are higher because it is necessary to work at greater depths, using more explosives. There is no hope of improving the situation by any sort of "rationalisation": every effort has been made to introduce the best methods, with the result that output per man shift in 1926 was a little higher than the 1909-13 average, though in no district was the 1913 level exceeded.* Nor can organisation do anything; in both areas the mines are owned by the Rhenish-Westphalian concerns and there is consequently no purchasing organisation in the home market.† There are two cartels, the Siegerland Eisensteinverein, and the Berg-und Hüttenmannische Verein, Wetzlar, both nominally controlling the whole output of their districts, but the former must allow such high self-consumption quotas that its power of market control is small, and the latter is no more than a loose price convention.

It is generally agreed that the mines must be subsidised in the interests of the population of the districts, which has no alternative industry and whose agricultural resources are poor; from June, 1926, the mines received a premium of 2 RM. per ton of output from the Reich and the governments of the states concerned. But the indefensibility of the subsidy on economic grounds was generally admitted and the premium ceased in the autumn of 1927; it was hoped that the special railway tariff then introduced would assist the mines for a time. The problem of the transfer of an industrial population—on a smaller scale resembling the British—remains to be dealt with.

Import of ore has in consequence increased in volume and the Ruhr industry relies to a greater extent on the Swedish supply.

	Siegerland.	Lahn and Dill.
*Monthly average output 1909-1913 ..	16.8 tons	16.1 tons
1913 ..	19.4 ..	18.2 ..
1926 ..	17.5 ..	18 ..

† Percentage of output controlled by concerns, 1926.

Siegerland.		Lahn and Dill.	
United Steel Works	44.5%	Krupp	36.5%
Krupp	.. 21.4	Gutehoffnungshütte	10.5%
Hoesch	.. 8.2	Buderus	13.1
		Preussag	.. 6.3
		Bürger	10.9
		United Steel Works	5.8

Import of Iron Ore.

	Million tons.	Iron Content.
Average 1919-13	12.029	5.64
1922	11.013	5.55
1923	2.377	1.32
1924	3.076	1.79
1925	11.579	6.27
1926	9.553	5.07
Jan.-Sept. 1927	13.358	6.99

Import from Principal Sources.
Thousand tons, Iron Content.

	1909-13.	1925.	1926.	1927.
Belgium*	113.7	109.5	86.9	87.9
France†	870.8	408.8	537.2	966.8
Sweden	2,225.5	4,475.7	3,566.3	5,361.1
Other countries	2,428.3	275.4	872.2	2,288.6

* From 1925 including Luxemburg.

† From 1925 including Lorraine.

Germany has always taken the greater part of the Swedish ore export, and though her share declined in the years immediately after the war it is now greater than in 1913. The higher iron content compensates for the higher transport costs.

*Total Swedish Ore Export.**Export to Germany.*

	Mill. tons.	
1909	3.19	2.5
1913	6.44	5.00
1919	2.41	1.47
1920	3.72	2.60
1921	4.33	3.25
1922	5.32	3.94
1923	4.95	2.50
1924	5.94	4.29
1925	8.80	7.12
1926	7.65	6.18

No difficulty in securing adequate supplies of ore is likely to arise except in so far as the power of producers in Sweden and Lorraine may be strengthened by political efforts to restrict production. In this one field the Ruhr industry finds itself dependent (for the foreign properties owned by it are at present insignificant) on the policies of other monopolistic organisations, the Swedish trust (the Trafikaktiebolaget Grängesberg-Oxelösund) controlling 90 per cent. of the Swedish phosphoric ore output, the Lorraine syndicate (Somilor) controlling the output of the minette area. At present there is no friction between the powerful groups; contracts are made between individual works and mines for the most part, though the Ruhr firms collectively have signed long-period contracts covering 60 per cent. of the total supply from Sweden; only about 20-25 per cent. of the total import passes through the hands of the trade.

The increase of ore import has not been greater because scrap consumption has increased. Of the iron content of the raw material required by the iron and steel industry for an annual output of 12 million tons of ingot steel, half takes the form of scrap, one-third of foreign ore, one-sixth of German ore.

Total Consumption of Scrap Iron.

Ore.

	Thous. tons.	%	Thous. tons.	%
Pre-war area, 1913 ..	6,892	27	16,100	73
Post-war area 1913 ..	4,766	32	10,560	68
1924 ..	5,057	44	6,600	56
1925 ..	5,980	39	8,950	61
1926 ..	6,006	41	8,660	59

Consumption of scrap could be increased by increasing the output of Siemens Martin steel, which since 1917 has exceeded that of Thomas steel.

*Change of Processes.
Steel Output in 1,000 tons.*

	Bessemer and Thomas.	Siemens Martin.
1913: old frontiers ..	9,373	7,418
1913: post-war frontiers	5,166	6,147
1924	4,017	5,462
1925	5,133	6,607
1926	5,453	6,582
1927	6,904	9,191

Area.	Year.	Total Ingot Steel Output.	Siemens Martin.	Thomas, Bessemer and other.
Rhineland-Westphalia ..	1913	10,112,000	5,139,300	4,972,700
	1925	9,895,700	5,251,800	4,643,900
West Upper Silesia ..	1913	349,200	349,200	—
	1925	366,400	366,700	—
North, East and Central Germany	1913	740,900	437,200	303,700
	1925	984,800	571,900	412,900
Siegerland, Lahn and Dill, Upper Hesse	1913	388,300	388,000	300
	1925	284,800	273,000	11,800
Saxony	1913	331,100	243,800	87,300
	1925	447,500	392,200	55,300
South Germany ..	1913	253,000	32,800	220,200
	1925	215,300	66,400	148,900

Scrap Consumption.

NORMAL CHARGE OF SCRAP.

Blast furnaces. 10 per cent., varying in different districts and depends on price relation of ore and scrap.

Siemens Martin Furnace. 70-80 per cent, about the same for acid and basic and for different sizes of furnace.

Cupola Furnace. 50-70 per cent.

Electro Furnaces. 70-100 per cent., size of furnace is indifferent.

Percentage of Total Scrap Consumption.

	1913.	1925.
Blast Furnaces ..	2.5	10
Foundries	14.5	14.2
Steel works ..	81.1	77.1

Average Charge of Scrap in German Blast Furnaces, per 100 tons Pig Iron.

	Tons.
1913	1.24
1919	12.30
1920	14.90
1921	14.52
1922	10.44
1923	10.45
1924	9.22
1925	6.31
1926	6.75

The increased demand in the years immediately after the War was met by the sale of Government stocks and the breaking up of the fleet, but these supplies have now ceased and

the question of the future supply and demand for scrap is acutely interesting and peculiar to Germany. Import is impossible since export is prohibited by all surrounding states. At present there is no absolute shortage on account of the export prohibition, and the fact that the steel industry is not working to capacity ; but it is believed that if the export prohibition were removed and the industry occupied to, say, 90 per cent. of its capacity, a scrap shortage might easily ensue, which would seriously affect the industry, especially the Central German and Eastern works, which rely almost entirely on scrap. Shortage of ores with high phosphoric content will necessitate further reliance on the Siemens Martin process in years to come, and scrap shortage would therefore necessitate production of pig iron of a kind suitable for use in the Martin steel works.

Hence the greater part of the evidence given to the committee of the Enquête Ausschuss is occupied by calculations of the amount of investment in iron and steel goods, with the object of estimating the future supply. The amount available at the present time is determined by the cost of transport. Since the pre-war period scrap freights have increased (1927) 38 per cent. for 400 km., 50 per cent. for 200 km., 60 per cent. for 50 km., with the result that though the price of scrap is not higher than in the pre-war period, its cost to the consumer has increased as much as that of ore, of which the price increase is roughly 20 per cent., and average transport cost 40 per cent. For many years the Western works have tried to persuade the Reichsbahn to introduce a through tariff, in conjunction with the Rhine shipping and canal authorities, thus forming a cheap route from South Germany to the Ruhr, a proposal recently finally rejected. In the East there are no waterways and general reduction of rates are the works' only hope ; how much higher the German rates are than those of other countries is illustrated by the experience of the compulsory scrap deliveries to Poland ; from Danzig to the Polish works the rate was 6.50 RM. per ton, from Stettin, the same distance, 16 RM.

APPENDIX II.

EXTENT OF MARKET CONTROL

I. CHEMICALS.

(A) Branches Controlled by the Trust.

The presence of the valuable by-products of Ruhr coal and the absence of pyrites mines necessitated the German industry's specialisation on the organic branch, in which before the war it held a monopolistic position. At the time German agriculture relied upon import of Chilean nitrate and the potash deposits. During the war, Britain, France, and the United States, being cut off from their source of supply, began to produce their own dye-stuffs, and German agriculture looked for a substitute for its nitrates, with the result that the German industry lost its monopolistic position in one branch at the same time as it widened its range. The great dyes firms were obliged to take the initiative in carrying out the requirements of the Hindenburg programme, for only they had the necessary experience and equipment. Not until 1925 did the chemical industry turn its attention to the manufacture of artificial silk.

The result of the industry's wider scope has been a change in location; the three main areas are engaged on different branches of production. Since the discovery of the alizarine process in 1869, the Upper Rhine and Main area has been the centre of the dye-stuffs industry, owing to its plentiful water supply and water transport facilities for Ruhr coal. All the dye factories are situated on the river banks, Weiler-ter-Meer, Bayer, Kalle and Badische Anilin on the Main. The towns in this area show the highest degree of industrial concentration in Germany: 63 per cent. of the total population of Ludwigshafen in 1925 were engaged in industry, 21 per cent. in chemicals, the highest percentage in any town engaged in any single industry.

The Central German area before the war produced only heavy alkalis and superphosphates, the large soda manufacturers, after the discovery of the Solvay process and abandonment of the Leblanc, having left their original site near Ruhr coal for the Halle salt deposits and adjacent lignite. The smaller Leblanc factories situated in Central Germany continued to make soda on the old process, relying on chloride of potash as a by-product until the discovery of the new process by a Bitterfeld factory

forced them to give up both and take up manufacture of superphosphates. At Oppau, the production of synthetic nitrogen had been carried on on a small scale before the war, but the plant was not extended during the war, being within the range of enemy aircraft: the great emergency plants were constructed at Leuna and Piesteritz in Central Germany, their site being chosen for the lignite deposits, which contain a high percentage of bitumen and provide the material for the Farben Industrie's coal distillation experiments. Should these succeed, the value of the Central German area's output will greatly exceed that of the Lower Rhine area; at present it is perhaps 75 per cent. as great.

The Cologne area is the site of the artificial silk works: the value of its output is probably about 25 per cent. as great as that of the Lower Rhine area. The many solitary sulphuric acid works which the trust controls are scattered over wide areas, because the industry must be situated near its consumers and use water transport if possible; hence works are found on the Elbe near Hamburg and Magdeburg, on the Oder at Stettin and Breslau, and in and about Danzig, Memel and Posen.

In all important products, the trust has the advantage of local concentration. Since the fusion it has re-organised the management of its works, dividing them into four districts, Upper Rhine, Middle Rhine, Lower Rhine and Central Germany. Further, it has concentrated certain branches of production in certain firms, for instance, pharmaceutical products in the Leverkusen and Höchst works: and has continued the process of concentration already begun, in the case of Griesheim (heavy chemicals) and photographic materials (Agfa).

(i) *Dyes.*

In this branch the trust has a monopoly.* Since the fusion it has re-organised its production, closing down three works, Leonhard of Mulheim, Wülfig-Dahl of Barmen, Jäger of Düsseldorf, which together accounted for about 1.5 per cent. of the total output. The works share in the total output as under:

	Per cent.		Per cent.
Ludwigshafen ..	23.10	Agfa, and Wolfen ..	11.20
Leverkusen ..	20.50	Kalle, Biebrich ..	4.45
Höchst ..	17.90	Weiler-ter-Meer ..	3.40
Casella, Frankfurt ..	14.80	Griesheim ..	3.25

* Another dye concern exists, of little importance compared with that of the trust, for its capital is small (15.20 Mill. RM.) and it is believed that the fusion of the members of the trust (Heyl, Beringen and Gützbrod) in October, 1927, was financed by the I.G. Wiedenfeld in his C.E.I. memorandum suggests that it is a rival of the trust which, of course, is impossible.

The production of dye-stuffs proceed on a unified plan ; certain dye-stuffs are concentrated in certain works. The number of dye-stuffs has been reduced from about eight thousand to two thousand.

Foreign competition in the home market has not been excluded as was expected, and the trust has met it, not by reducing prices but by a propaganda campaign for fadeless dyes—the so-called "Indanthren" dyes, which has succeeded in convincing consumers that no other dyes are fadeless and has secured the market at least for high quality dyes. Thus import is now confined to the cheaper qualities.

Average Value per 100 kg. in RM.

GERMAN EXPORT :	1925.	1926.	1927.
Anilin and Tar product dyes	728	625	537
Alizarin dyes	1,048	885	1,163
GERMAN IMPORT :			
Anilin and Tar product dyes	475	475	475
Alizarin dyes	452	451	456

The price policy of the trust has not been extortionate, but it is arguable that the "Indanthren" dyes campaign was economically unjustifiable, since the campaign itself was costly and has no doubt stimulated the use of higher quality dyes when lower quality would do. There can be no question of exploiting the home market to compensate the lower prices in the foreign market, because at least 75 per cent. of the trust's output is exported (estimated at 85 per cent. before the war).

(ii) *Nitrates.*

The trust owns the patents for the two chief processes for the fixation of atmospheric nitrogen, Frank-Caro (cyanamide) and Haber-Bosch (the direct synthesis of ammonia), using the Haber-Bosch process at the Badische Anilin works at Oppau, which was producing before the war, and the Leuna works at Merseburg constructed during the war ; until recently it also used the Caro process at the Knapsack works, but these have recently been converted to production of synthetic acetic acid. Under the Hindenburg programme, works were constructed by the government at Piesteritz, using the Caro process, now the property of the Mitteldeutsche Stickstoffwerke A.G. Recently these also have been converted ; half of the works are rented to the Farben Industrie and the Bayerische Stickstoffwerke A.G. for the production of electrolytic phosphorus, and in the other half the calcium cyanamide produced in the Bavarian works is converted

into nitrates. The only important independent calcium cyanamide producer at present is therefore the Bayerische Stickstoffwerke A.G., at Trostberg, whose output is small compared with that of the trust. So far as these two processes are concerned, the trust dominates the industry. To make the present position clear it is necessary to explain the nature of the processes used, because the industry has not yet taken a permanent technical form (in so far as any branch of the chemical industry is technically permanent). Costs of production of the processes are more or less equal and too high, as a result of the high cost of sulphuric acid, due to the absence of supplies of pyrites; the Haber-Bosch process requires large quantities of sulphuric acid (4 kilograms of 60° Bé to fix 1 kilogram of ammonia), and would be more costly than ammonia produced as a coke oven by-product, if the Caro product, nitro-lime, could be used alone; nitro-lime, however, is a fertiliser useful for some soils but generally dangerous and requiring the addition of sulphuric acid in the form of ammonium sulphate, with the result that the final product requires as much sulphuric acid as the Haber-Bosch. Thus the high cost of nitrate production has driven German agriculture to the use of nitro-lime alone and the Badische Anilin works to experiment with the object of perfecting the gypsum process for the production of ammonium sulphate, which dispenses with sulphuric acid.

Since the cost of synthetic nitrate production does not compare favourably with that of natural and by-product nitrates there are great possibilities for any concern which may hit upon a more profitable process, and the trust is anxious to suppress competitors of this kind. Two Ruhr mines, the Mont Cenis (Röchling concern) and Hibernia (property of the Prussian state) together founded the Gasverarbeitungs G.m.b.H. in March, 1927, to use the Uhde process, similar to the Haber-Bosch but working at lower pressure. The I.G. Farben Industrie, apparently not relying on expert opinion (which held that the process had no commercial future), in May, 1927, brought a suit for infringement of patent against Mont Cenis, which it lost. It is said that the Mont Cenis mine is financed by the Prussian government with the intention of destroying the Farben Industrie's monopoly: so presumably if the process is successful the coal mines will seek no agreement with the trust. Another Ruhr concern, Klöckner, is installing plant for the Claude process working with higher pressure than the Haber-Bosch; and in October, 1927, the United Steel Works and other Ruhr concerns founded the Kohlechemie A.G. to use the Casale process. The competitors are no longer by-product ammonia, Chilean nitrate, and synthetic nitrates, but synthetic nitrate produced by different processes, and mixed fertilisers of different composition.

German Nitrate Output.
In 1,000 tons Pure Nitrates.

	Fertiliser Years.		
	1926/27.	1927/28.*	1928/29.*
I.G. Farben Industrie: Oppau ..	100	100	100
Leuna ..	340	500	600
A.G. für Stickstoff. (arc) ..	5	10	10
Elektro Nitrum process (cokery) ..	4.5	50	50
Chem. W. Lothringen ..	30.5	50	50
Total ..	480	660	760
Bavarian and Central German works			
cyanamide ..	45	90	90
Ammoniak Verkaufs Vereinigung ..	60	80	96
Gaskoks Syndikat ..	—	—	60
Other cokng plant ..	—	2	12
Ruhr coal interests:			
Mont Ceniz and Hibernia ..	—	—	?
Klöckner-Wintershall ..	—	—	—
Ruhr Chemie A.G. ..	—	—	—
Total ..	585	832	1,018

* Waller's estimates.

B. Branches in which Other Producers Exist.

(i) *Heavy Chemicals.*

"In pre-war days sulphuric acid was regarded as the most important heavy chemical for use as a re-agent in almost every staple industry. Today probably about one-half of the sulphuric acid manufactured in the world is used in converting phosphate rock into the fertiliser, superphosphate of lime. The second largest use is in connection with the recovery of ammonia at gas works and at cokng plants."* Since the war both consumers have had to meet the competition of the atmospheric nitrogen industry, and their demand has declined while the nitrate processes have not provided a substitute, for the I.G. Farben Industrie, in order to reduce the cost of synthetic nitrate production and to free itself from dependence on foreign pyrites, uses processes which reduce its works' consumption of sulphuric acid and is carrying on experiments in its laboratories to discover methods of eliminating its use still further. As a result of the competition of synthetic nitrates with the products of the acid's chief consumers (including the explosives industry) combined with these attempts, the German output of sulphuric acid in

* See C.E.I. memorandum on the Chemical Industry.

1925 only reached two-thirds of the 1913 output, though the world output exceeded that of 1913 by 25 per cent. When the new process of phosphate conversion in the electric furnace is perfected the industry must face gradual extinction.

The trust controls numerous sulphuric acid works, supplying its own needs largely from those at Griesheim; it does not appear to injure the independent producers and indeed would have no object in doing so, for difficulties of transport restrict the chemical to a local market, and works are scattered all over Germany.

The *soda* industry is dominated by the Deutsche Solvay Werke A.G., completely controlled by the Belgian concern. With its capital of 75 mill. RM. and 8,000 workers it is the most important chemical undertaking next to the trust, a vertically organised concern owning salt and lignite mines; its importance seems likely to increase as the Bernburg works are planning an increase of 50 per cent. of their output (from 100,000 kg. to 150,000 kg. daily, equal to an annual output of 450,500 tons).

Sulphate and Hydrochloric Acid.—Formerly these were the products of a special industry which converted salt into sulphate and hydrochloric acid with the sulphuric acid produced in its own works, an industry now disappearing under attack by by-products on both fronts. The Farben Industrie is now responsible for the greater part of the output of hydrochloric acid, producing it by the direct union of chlorine and hydrogen, the chlorine being a by-product in the electrolytic production of caustic alkali: no cartel exists and the old industry is in process of extinction. War time shortage of sulphuric acid stimulated production of by-product sulphate by the potash mines; since it is a by-product, costs are incomparably lower. The potash concern Kaiseroda withdrew from the convention in 1924, finding its market restricted by convention prices; the old sulphate producers found their position endangered and succeeded in getting the convention renewed after its dissolution, though on terms less favourable to themselves. The maintenance of the cartel agreement cannot hinder the extinction of the old factories, which are rapidly being closed down.

(ii) *Superphosphates.*

The decline in production in superphosphates has been due to the collapse of both the export and the inland markets. Total production declined from 1.85 million tons in 1913 to 0.66 million in 1925: export declined from 283 thousand tons in 1913 to 46 thousand in 1925. (80 thousand in 1926.) The loss of the export trade is due to the development of the industry in distant European and neutral countries, which erected their own plants

while unable to obtain their normal supply from the belligerent countries, which needed all their own sulphuric acid for the manufacture of explosives. In 1925/26 consumption of phosphates by German agriculture only amounted to 68 per cent. of the 1913 consumption. The decline is partly the result of the import of basic slag from the Lorraine and Luxemburg furnaces, stimulated in 1926 by franc inflation. It is argued that neither basic slag (a winter dressing) nor nitrates should be regarded as competitors of superphosphates, a spring dressing; in practice, however, they are used as substitutes. In the case of the Farben Industrie's new mixed fertilisers, Leunaphos and Leunaphoska, no such alibi can be pleaded.

The industry has resorted to fusions as a means of closing down inefficient works. Some time before the War the number of factories was decreasing; there were 131 factories producing in 1905, eighty-four in 1913 and fifty-four in 1927. In 1926 two fusions took place, one between the Guano-Merck firms in Hamburg and Lübeck, the other between a Berlin firm, the Chemische Fabrik Milch, A.G., and a Stettin firm, the A.G. der Chemischen Produktenfabrik, Pommerensdorf, one of the largest factories of the Silesian Oberkoks firm. In the Milch-Pommerensdorf fusion the Norderham works of the Oberkoks concern were not included, because a North-West German firm would have no object in entering a combination of North-East German producers which aims at closing down works. The wide dispersion of other works will probably hinder further trustification.

In the production of mixed fertilisers, one firm, until recently, competed with the Farben Industrie: the Rhenania-Kunheim group. (Rhenania's fertiliser is made by a kind of blast furnace process. The Farben Industrie's process consists of heating the rock phosphate in an electric furnace; for this process the F.I. and the Bayrischer Stickstoffwerke have made an agreement with the Government Nitrate Works at Piesteritz for production of phosphorus by the electrical process for an ammonium phosphate fertiliser, not Leunaphos.) The fusion of the two companies took place in 1926, before competition with the dyes trust had become acute, with the object of improving Kunheim's financial position; competition in 1927 was so acute that Rhenania was obliged to write down its capital of 20 mill. RM. to 10 mill. RM., and to close down four works.

In November, 1927, it was announced that the majority shareholders of Rhenania, the potash group Neustassfurt Friedrichshall (which after the fusion acquired the Kunheim family's shares and undertook to provide Rhenania with potash), had made a contract with the Farben Industrie for common sale of some of the Company's products, sulphur and barium compounds and acids, but not Rhenania phosphate. No doubt this arrangement

will before long lead to the trust's absorption of Rhenania, since it is a small firm and not financially sound.

(iii) *Artificial Silk.*

The Farben Industrie's interests were only recently acquired and its output is at present small compared with that of the Glanzstoff-Bemberg group, which is responsible for 85-90 per cent. of the total German output. Of the 1927 output of 18.5 Mill. kg., 8 Mill. kg. came from the Glanzstoff Company's four works, 3½ from Glanzstoff-Courtaulds, 1½ from Bemberg of Barmen, 1½ from the Breslau works founded by Glanzstoff and Bemberg, and 1½ from the works of the Dyes I.G. At the beginning of 1928 its interests consisted of :

(i) Viscose : one works at Wolfen, producing 2,000 kg. daily, and three other works taken over from Köln Rottweil in 1926 not yet producing, with a capacity of 5,000 kg. daily each.

(ii) Cupra-ammonium : a half interest in the Hölkenseide firm which uses the Bemberg patent ; acetyl cellulose is being produced at the Köln-Dormagen works.

(iii) Acetate: the trust have been characteristically responsible for the introduction of this process : in collaboration with Glanzstoff it set up in 1926 the Acetate G.m.b.H. in Berlin-Lichtenberg, at present not producing ; both firms are sceptical as to its prospects.

The total output of viscose and copper silk at the beginning of 1928 was 11-12,000 kg. daily ; by the end of the year it was expected to amount to 22,000 kg. daily.

These interests draw the trust into the international network of alliances "fabulous in size and nebulous in character," with Du Pont de Nemours, financially almost as powerful as the trust itself, through the fusion with Köln-Rottweil, and with Glanzstoff-Bemberg (and therefore with Snia Viscosa and Courtaulds) through the Aceta G.m.b.H. and Hölkenseide. Both connections are slight, and though co-operation with Glanzstoff-Bemberg is a matter of course, the trust develops its new processes independently. If the trust increases its output on the scale prophesied, it will have to seek a closer alliance with Glanzstoff.

It is difficult to say what the effect on Glanzstoff would be. The firm has dominated the German market since its foundation in 1902. Unlike Bemberg, a century-old silk-weaving firm with which it amalgamated in 1924, it has always produced artificial silk only: since the war its position has been even more secure, for the small firms, which flourished until the substitution of viscose for the cupra-ammonium process necessitated a scale of production of at least 1,500 kg. daily, have all been absorbed, with one exception, F. Kuttner of Pirna. Thus the Farben Industrie is the group's only potential competitor in the home market. The

Viscose Convention represented simply an agreement between the two, a defensive measure against inflation—stimulated import of French and Italian silk into the practically unprotected German market in 1925 and 1926. Shortly after the Köln-Rottweil transaction, the two groups agreed to introduce a uniform system of grading and price calculation. In 1927 the producers were able to draw knitters, weavers, and consumers of artificial silk waste, wholesale and retail traders into an "Arbeitsgemeinschaft." The price policy of the convention is generally considered moderate, though it appears to have raised prices in 1927 to take advantage of the textile boom when world prices were not rising. Although import of foreign silk increased during the period of its control, and broke up the convention in December, 1928, the increase was not due to an excessively high price level. Successful in stabilising the market it certainly was, but the genuine cartel problem—regulation of output—was unknown to it, for since it began the industry has had one long boom.

No agreement exists at present with foreign concerns for acetate silk: when the Acetat G.m.b.H. begins to produce it may have a rival in Deutsche Acetat-Kunstseiden A.G. Rhodiaseta of Freiburg, founded in 1927 by the Ruhr heavy industry firms with the patent of the French group, Bernheim.

It does not appear that the artificial silk firms derive any economic advantage from their membership of the chemical trust—that they can rely, for instance, on a cheaper supply of cellulose or heavy chemicals. None of the great concerns are independent of the market for raw material, nor need they be. Glanzstoff made attempts to secure its supplies of cellulose, but failed to obtain control of the South German Waldhof concern in 1923, and of coal, purchasing the Adler mining company in 1921. Köln-Rottweil, previous to absorption by the Farben Industrie, had acquired control of a cellulose firm, Gebr. Vogel in Zell in Weisenthal. Both Glanzstoff and Köln-Rottweil control their own supplies of heavy chemicals; part of Glanzstoff's caustic soda, bisulphide of carbon and ammonia requirements are provided by their own works at Sydowsaue; the Köln-Rottweil group is, of course, supplied by the Farben Industrie; the Hölkenseide works, controlled by the Farben Industrie and Bemberg together, one supplied by the A.G. für Anilin fabrikation, the property of the former.

Nor does it appear up to the present that the artificial silk undertakings are much profited by the trust's financial power. None of the absorptions and expansions of Glanzstoff-Bemberg in 1925 and 1926 necessitated the issue of new capital until the spring of 1927; Glanzstoff-Courtaulds was provided with its 2 million RM. from the working capital of the two concerns. It

seems likely that the trust's financial strength will give it an advantage in the future: Glanzstoff could not emulate the loan of 250 Mill. RM. convertible bonds issued in 1928 to finance the new artificial silk works and the synthetic fuel experiments.

(iv) *Synthetic Fuel.*

The more sensational the activities of the trust, the more reticent is its attitude concerning them. Very little information is vouchsafed to the public about the finance and nature of the synthetic fuel processes. Here the available information is summarised in order to indicate the relations of the trust with the Ruhr coal and steel concerns, Standard Oil and the Shell group.

There are three principal processes:

(1) For the first the Ruhr firms are responsible; it was discovered by Fischer and Tropsch at the Coal Research Institute at Mulheim (for its exact nature see "*Brennstoffchemie*" for April, 1926). The plant is being installed by the A.G. für Kohlenverwertung, founded by concerns in the Ruhr and Aachen coal seams and the Cologne lignite seam.

(2) Liquefaction on the Bergius process, using lignite, has been carried on since April, 1927, at the dyes trust's Leuna works near Merseburg, and the product is on the market. In August, 1927, Standard Oil announced that an agreement had been reached between it and the dyes trust for the exploitation of this process.

(3) The patents for the third, distillation by the cracking method (also the Bergius process), are owned by the Steinkohlen Bergin A.G., 35 per cent. of whose capital is controlled by the Gesellschaft für Teerverwertung, which was founded by the United Steel works and other heavy industry concerns, and 65 per cent. by the Farben Industrie through the Evag (Erdöl und Kohle Verwertungs-Gesellschaft, acquired in 1925 and 1926 from the Ruhr interests which had acquired it after the dissolution of the Stinnes concern). The Gesellschaft für Teerverwertung in April, 1927, set up the A.G. für Kohlenverflüssigung, which intends to use the Bergius patent and must, therefore, secure an agreement with the dyes trust as represented by the Steinkohlen Bergin. The Deutsche Gasolin A.G. (taken over from the Stinnes concern) is to finance this process; its capital is in the possession of the Dyes Trust, Standard Oil, and the Shell group. In addition, an agreement for the exploitation of this process was made between Standard Oil and the Dyes Trust in August, 1927.

(v) *Wood Distillation.*

The trust's discovery of synthetic methyl and butyl alcohols has revolutionised this branch. The existing producers are obliged to close down (as Henke und Baertling A.G. of Holzminden)

to concentrate on other products (the Verein für Chemische Industrie of Frankfurt) or to seek agreement with the trust. Two agreements have been made, one under which the Holzverkohlungs A.G. of Constance, the largest producer in this branch (capital 10 mill. RM.), and the Frankfurt Verein who were contemplating fusion as a remedy in 1926, undertake the sale of the I.G.'s methanol, in all markets except Great Britain and the United States, and the other to regulate the sale of acetic acid with allotment of quotas.

The I.G.'s nitro-cellulose lacquers have revolutionised the lacquer branch and price agreements exist between the I.G. and certain old factories. Seventy of the cellulose lacquer manufacturers are organised in the Gesellschaft für Zellulose-Lackindustrie; the pyroxylin lacquer manufacturers have attempted in vain to organise themselves against complete substitution of the new product.

(vi) *Gases.*

Gases are produced by the Griesheim Elektron firm whose branches are scattered all over Germany. For Berlin an agreement exists with the Linde refrigerator concern: the trust and Linde control the Vereinigte Sauerstoff Werken, which at the beginning of 1926 began to compete violently with the forty or so independent works, reducing its prices to a level which barely covers their costs and forcing them to form the Deutsche Industriegas-Vereinigung e.V.

(vii) *Pharmaceutical.*

The concentration of resources proposed in Duisberg's famous 1904 memorandum was intended to include the pharmaceutical firms as well, but none of them joined either of the two Interessengemeinschaften which resulted from it, because they saw no advantage in alliance with partners financially so much more powerful than themselves. They took Duisberg's advice, however, and formed an Interessengemeinschaft among themselves in the following year, including all the important firms (Gehe & Co. A.G., E. Merck, Knoll & Co., J. D. Riedel, C. F. Boehringer & Söhne), with the exception of Vereinigten Chininfabriken Zimmer & Co. Its object was similar to that of the two agreements in the dyes branch: co-operation and price regulation. The I.G. has existed continuously since, being undisturbed by the withdrawal of J. D. Riedel in 1920: it is accompanied by many secret agreements for special products.

Besides these firms, which are makers of pharmaceutical products only there are two others not included which manufacture other chemical products: Schering (16 mill. RM.) a member of

the Silesian Oberkoks concern, and von Heyden of Dresden (also heavy chemicals and alkali electrolysis).

Little is known of the trust's relation to these two groups. Between the trust and one member of the pharmaceutical I.G., Merck, agreements exist for the sale of many products, and for co-operation in the actual manufacture of the rachitis remedy. The Farben Industrie and the two mixed firms are members of the Verband deutscher Chemisch-Pharmazeutischen Gross-industrie e.V., which is believed to act as a cartel: the trust has made a special agreement with von Heyden about its semi-finished tar dye products. Riedel alone appears isolated.

A survival in this branch presents a curious contrast to the large undertakings: in almost all the larger villages on the northern side of the Thuringian forest there is a chemical factory often of a "hand-work" character, employing no scientific workers, using old family recipes, plant extracts and pine needles, paying low wages, and favoured by the proximity of the glass, carton and wood industries.

C. Branches in which the Trust is not interested.

The I.G. Farben Industrie has no glue or soap interests. These products are controlled by a trust formed in 1923, the Vereinigte deutsche Fettwerke A.G., 50 per cent. of the capital of which is owned by the Sunlicht A.G. of Mannheim, a subsidiary of Lever Brothers, 25 per cent. by the Verkaufsgemeinschaft deutscher Oelmühlen A.G. Hamburg, a union of seven oil mills, and the Scheidemantel firm which has a monopoly of glue.

Nor has it any interest in certain coal-tar products—for instance, roofing felt, of which Rütgerswerke (Silesian coal, Central German oil and lignite) and Oberkoks (Silesian coal and coal-tar products) are the principal manufacturers. Their subsidiary companies amalgamated in 1927.

D. Cartel Control.

The cartel fulfils a subordinate but essential function in every branch of the industry: only the pre-war dyes agreements (alizarine and natural indigo) have been superseded by trustification. Even where the trust controls 80 per cent. or 90 per cent. of the branch's output, as for instance, nitrates, lithopone, carbon disulphide, the cartel organisation has been maintained. In the nitrates syndicate, the I.G. has used its influence to hold prices high enough to enable the cyanamide works to continue production, even though it might have benefited itself by a larger volume of sales at lower prices. Other branches not controlled by the trust, but by other large concerns, have developed powerful marketing organisations: superphosphates, soda, borax and caustic alkali, are all controlled by syndicates regulating output,

prices, and sales. Weaker organisations fix prices of basic slag and sulphuric acid (local associations). In only one important branch—hydrochloric acid—does genuine and violent competition prevail.

II. TEXTILES.

Owing to the great variety of the textile branches and the incomplete character of the production statistics, it is difficult to arrive at a satisfactory estimate of the total volume of production.

The foreign trade figures are not much guide to the position of the industry as a whole because many of the exporting branches are peculiar and the industry as a whole exports a much smaller percentage of its total output than do the British and French industries. Kertesz (*Die Textilindustrie sämtlicher Staaten, 1917*) estimated the total value of German textile output at 5,312.8 Million Marks, of which 77.5 per cent. was taken by the inland market and 22.5 per cent. exported. (The value of the total textile import he estimated at 2,018.8 so that even if there had been no export German production could not cover the demands of the home market.) His estimates are not sufficiently detailed to serve as a basis for comparison with the post-war period. The percentage exported varies very much from branch to branch; the Institut für Konjunkturforschung uses rough estimates for the percentage of output exported by branches of the industry (Silk 33½ per cent., wool 15 per cent., cotton 10 per cent., linen, hemp, jute 13 per cent.) but even if these estimates are accurate enough they are not very useful in view of the variety of further sub-divisions.

As the annual or biennial census of production results cannot be used in conjunction with the foreign trade returns, it is better in attempting a rough estimate of the value of production (with no intention of comparison with the pre-war period) to rely wholly on these rather than on the foreign trade figures. The census results are more complete than in the pre-war period, since the first post-war census included the weaving branches, as the pre-war censuses did not. At the time of writing, however, there are only 1925 returns for the weaving and woollen spinning industries and as the financial crisis made itself felt with exceptional severity in textiles, causing a considerable decline both in the volume and value of total output, these cannot be used as a basis for an estimate in 1926 unless it is assumed that the output of the weaving branches underwent the same percentage decline in value as that of the spinning branches. Assuming on their basis that the value of the production of the weaving branches is 2.9 Milliard RM., the gross output of the textile industry might be put at 5 milliard RM.

Value of Total Output of Yarn and Thread.

	Milliard RM.	
	1925.	1926.
Cotton	1.2	.821
Worsted .. ..	.612	.553
Woollen .. ..	.316	.280*
Linen .. ..	.092	.054
Jute .. ..	.164	.116
Hemp .. ..	.096	.079
Silk .. ..	.173	.149
Total	2.653	2.052

* Estimate, no 1926 result.

Value of Output of Woven Material.

	1925.
Wool and half wool clothing	1,119,315
Carpets	121,913
Sundry wool	51,947
Cotton	1,236,364
Cotton velvet and plush	45,364
Furniture material	126,774
Silk	381,318
Linen	290,435
Heavy fabrics	49,954
Jute	141,096
Sundry	113,750
Total	3,678,230

(From *Wirtschaft und Statistik*, 1927, pp. 414, 732, 768, 928; 1928, p. 392; 1929, p. 318.)

For the purpose of estimating the amount of output controlled, the output of the different branches can be divided as under :

	Milliard RM.	
	Output, 1926.	Controlled.
Cotton	1.9	0.4
Woollen and worsted	1.9	1.0
Linen	0.3	0.2
Silk	0.4	0.0
Jute	0.2	0.2
Hemp and sundry	0.3	0.2
Total	5.0	2.0

Cotton certainly does not control so much as one-quarter of its output. Fluctuations in the price of raw cotton would probably not have been sufficient to prevent a general price association of spinners, since the industry enjoyed up to 1924 a measure of protection, had the industry been locally concentrated. As it is, there is no general price cartel of cotton weavers or spinners; the spinner's national organisation (the *Arbeitsausschuss der deutschen Baumwollspinnerversbände*) succeeded in establishing in 1920 a standard sale contract for yarn, with the weavers' national association, which marks a considerable advance on pre-war organisation.

The prevalence of the connection of weaving and spinning varies in the three main areas*: the only figures available are the totals for the whole Empire, which show that about 40 per cent. of the total annual production of cotton yarn is woven in the same establishment; about 20 per cent. of all doubled yarn is woven by the doubler; and about 6 per cent. spun on commission. In the Lower Rhine and Dutch frontier area† weaving and spinning are usually carried on in separate establishments; the area purchases very little yarn from the rest of Germany. Before the war the spinners of the area agreed to institute a central office to fix yarn prices varying with prices of raw material and spinning costs; the complaints of the weavers suggest that they succeeded.‡ Since the war no yarn prices have been fixed. The large establishments, uniformity of conditions and organisation of labour in this district contrast with those of the Central German area, in which conditions are so diverse that no price association of spinners and weavers has ever been possible. In Central Germany all counts, from the coarsest to the finest are spun; sometimes one establishment spins several counts. Most of the speciality branches are located in Saxony.

* Production of Cotton Yarn and Thread, 1925.

	Yarn.	Thread.
	Mill. Kg.	
1. Prussia	97.4	19.4
(Rheinland- Westphalia)	79.9	16.9
2. Saxony	64.5	7.0
3. Bavaria	64.5	7.0
Württemberg	42.6	4.9
Baden	20.9	1.7
	12.0	0.8

† i.e., München-Gladbach, Mulfort, Viersen, Rheydt, Dulken, Gronau, Rheine, Nordholt, Bocholt.

‡ Dilthey, *Geschichte der niederrheinischen Baumwollindustrie*, 1912.

So far as generalisation is possible, weavers appear better organised; in the Vögtland a strong condition cartel exists which acts, it is believed, as an open price association: the national organisation of the coloured weavers (the Verband deutscher Buntwebereien), has set up an arbitration court in Leipzig to settle disputes with consumers, in co-operation with the association of the linen weavers, weavers, and handkerchief manufacturers, but makes no attempt at price regulation. In Central Germany the prevalence of the connection of weaving and spinning varies from town to town: in the Upper Franconian district* with which the Chemnitz area exchanges its yarn, the spinning and weaving establishment is about as common as the one-process establishment; the Silesian industry confines itself almost entirely to weaving and purchases its yarn from Saxony. The third principal area, South Germany, is locally coherent and fairly uniform: the characteristic firm spins low and medium counts and weaves plain cloths for printing and bleaching. Consequently combination of weavers is much easier than in the other areas: the Verband Süddeutscher Baumwollindustrieller of Augsburg, an old condition cartel, acts as an open price association; in the middle of 1926 the South German weavers came to an agreement on minimum prices and "when a sudden fall in the price of raw cotton by about 40 per cent. occurred in September and October the effect on the prices of cotton manufacturers was inconsiderable."†

The woollen and worsted industries probably control roughly half their total output, though they are even more widely distributed than cotton. Wool spinning is the principal industry in certain Saxon towns, as Crimmitschau, Werdau, Kirchberg and Lengenfeld, but has less importance in the central German areas as a whole than worsted spinning, which is carried on in nearly all the larger Saxon and Thuringian towns. Both are found in Eastern and Northern Germany.‡ In the west, worsted yarn is spun in the Rheinland area, München-Gladbach, Aachen, Kettwig a.d. Ruhr, and has recently arrived in the Palatinate where woollen yarn has two old important centres, Lambrecht and Kusel. Neither industry appears to be developing a greater degree of local concentration. Unlike cotton, the connection of spinning and weaving offers definite advantages and disadvantages. The worsted branch is more specialised than elsewhere in Europe: according to the 1925 production census only 7 per cent. of the total annual production of worsted yarn was woven

* Hof, Münchberg, Bamberg, Bayreuth, Erlangen, Fürth—Hof is generally considered the nearest approach to the Lancashire cotton town.

† *Department of Overseas Trade Report, 1927.*

‡ Worsteds in Lückenwalde in Brandenburg, in Lusatia, Spremberg, Cottbus, woollen in Brandenburg, Lower Silesia, Neumunster.

by the same establishment. In the woollen branch the same establishment usually weaves and spins, and the connection of processes appears to be becoming more usual for the 1907 production census showed that half the total annual production of yarn was woven by the same establishment, while in 1925, "combined establishments" accounted for more than three-quarters of the total output of yarn. The technical causes for the contrast between the two branches are universally effective and well-known. The average woollen firm employing 100 to 300 workers is smaller than the average worsted spinning firm, which employs about 500.

As might be expected, organisation of spinners and combers has been most successful in the worsted branch, and organisation of weavers in the woollen branch. However, the worsted spinners' and combers' association (the Verein deutscher Wollkammer und Kammgarnspinner) although it is a powerful organisation and includes nearly all spinners and combers, only fixes terms and not prices. The eight large commission combers have maintained a price convention since the 80's which attempts to equalise differences arising from the geographical position of its members, but the industry does not suffer from excessive conversion costs, because at least half the annual output of yarn is combed by spinning establishments, so that the independent combers are not in a position to dictate. The few independent spinners of the woollen branch, because they are locally concentrated, have succeeded in forming price conventions, one in Forst, one in Cottbus, one in Reichenbach.

No weavers' organisation in either branch has much influence on the market, with the exception of the clothmakers' convention, which included nearly all cloth manufacturers at the date of its foundation. Since 1923 it has included the Verband halbwollener und wollener Stoffe and the Saxon-Thuringian weavers, so that it can dictate terms to traders, which were the subject of bitter controversy from the middle of 1924 to the end of 1926; at one point the traders petitioned the Reichs Economic Minister to prosecute the convention for behaviour "gegen die guten Sitten," with no result. In the end the Cloth Convention made some concessions, in particular an extension of credit terms after the traders had formed a defensive organisation (the Vereinigung der Tuchgrossisten in Herrenbekleidungseinzelhandel).

Linen.—The strongest spinners' organisation is found in the linen branch, controlling 90 per cent. of the total output. Since the middle of last century the industry has been growing more locally concentrated, a process not perceptible in any other textile branch. The eastern industry centres round Lauban and follows the lower heights of the Rieserigebirge into Silesia; in the west the centres are Bielefeld, once famous, now losing its pre-eminence,

Kampen and Düren. Connection of weaving and spinning is not usual: according to the 1925 census of production, only 20 per cent. of the total production of linen yarn is woven by the same concern. Under these circumstances it is surprising that no permanent spinners' cartel existed before the war.* War organisation left behind it a central office, (the *Leinengarnabrechnungstelle*) and accustomed manufacturers to co-operation, but in the following two or three years the industry prospered in comparison with other textile branches, so concentration was postponed: the stabilisation crisis showed that output was in excess of demand and restriction necessary. A syndicate contract was signed in June, 1926, by firms controlling 265,000 spindles out of a total of 300,000 employed in the industry, the outsiders being smaller establishments. Under the contract the *Leinengarnvertriebsgesellschaft G.m.b.H.* undertook not only to fix prices and terms of delivery, but also to regulate production and to allow rebates to weavers who agree to deal exclusively with it. The weavers responded by setting up a committee to safeguard their interests; apart from this, their branch is unorganised except for one or two condition cartels; they use antiquated methods and home work lingers in many districts. No syndicate can do much to rescue the industry from the depression it is enduring.

Silk.—Before the war well-organised condition cartels existed in every branch of silk weaving: there are no silk spinners' associations because independent spinners do not exist. None of the highly organised cartels now control prices. The present *Verband der Seidenstofffabrikanten* (with eighty-seven members, sixteen affiliated members) includes all manufacturers of silk (in the narrow sense, for clothing); it dates from 1905 and has always been a condition cartel, though before the war one of its branches, the crepe manufacturers, succeeded in forming a price association. The *Turquoise-fabrikanten* (cachenez weavers) have belonged to a condition cartel since before the war. The manufacturers of umbrella silk belong to a condition cartel, the *Verband der Schirmstofffabrikanten*, which in 1926 aroused great opposition by granting rebates to customers who undertook to deal exclusively with it; traders threatened cartel court proceedings without effect. Only one cartel, the *Verband deutscher Krawattenfabrikanten*, fixes prices as well as terms: it has done so since 1906, having been founded in 1903 as a condition cartel.

The jute, hemp and linoleum branches control the whole of their output.

* In periods of depression certain branches achieved temporary cartels—the spinners in 1892-94, and 1901-02, weavers in November, 1899, and the doublers in 1899-1900.

The jute syndicate (*Interessengemeinschaft deutscher Jute-industrieller*) was formed as a result of the rise of jute prices in April, 1926. In that month the Dundee jute spinners gave up their minimum price agreement and the German syndicate which had existed since 1920* broke up; for some time its production quotas had been ineffective, because firms refused to reckon their export in their production quota. The present syndicate is stronger in appearance in the inland market than its predecessor, but as it now permits members to export, without reckoning export in their production quota, its actual control is weaker. Throughout 1926 and until the third quarter of 1927 it restricted productive capacity by 50 per cent.; in the third quarter of 1927 it restricted it by 40 per cent., although production was increasing to a greater extent; the extra output was, therefore, exported, so that syndicate policy has the effect of stimulating export, thus explaining the disparity between post-war and pre-war production capacity and inland consumption.

The syndicate includes eleven out of the thirty-four firms, and covers about 80 per cent. of the total production, since the smaller firms are excluded. Half of the syndicate members' output is produced by the Blumenstein group (whose withdrawal in April, 1926, was therefore decisive).

The hemp industry is dominated by two large concerns, the *Bindwarenfabrik Immenstadt* and the *Seilenwarenfabrik Füssen*, which, in 1920, made an *Interessengemeinschaft* to arrange for common sales purchase and export, and to "complete each other's production programme." About three-quarters of the total hemp output is produced by these two firms; and most of the remaining quarter must be produced by the *Hanf-Union A.G.* (capital 3 Mill. RM. against *Füssen-Immenstadt's* 11.2 million) which represents the Blumenstein concern's hemp interests. These companies are members of a syndicate which regulates output and prices, the *Verband deutscher Hanfindustrieller, G.m.b.H.*, a pre-war cartel of long ancestry, which lapsed after the war, and was not revived till May, 1927, when it issued its first price list.

In the linoleum branch, trustification has superseded the syndicate, which was first formed in 1910. Since its renewal in 1920 the agreement has often been broken, though actually there was only one outsider. The present company, the *Deutsche Linoleumwerke A.G.*, originated from the fusion of four companies, two of which were already controlled by the *Bremen Linoleumwerke A.G.*, *Delmenhorst*, which therefore remains a holding company. The motive for trust formation appears to have been the *Delmenhorst* company's wish to dominate the market: before the fusion it owned a controlling interest in the *Hansa* and *Ankermark* companies, both of *Delmenhorst*, and when the

* There has been a syndicate since 1901 of the same kind.

Germania company of Stuttgart brought a new floor covering similar to linoleum on the market, it made an agreement with the company and with the other remaining works, the Maximiliansaw A.G., but fearing that this agreement might be ineffective, persuaded the companies that fusion would be advantageous to them. The trust proceeded to rationalise; it has divided the market into five areas, each served by one company, it has reduced its number of designs, and its works are to specialise on certain designs and qualities. It is not over-capitalised: for 1927-28 it paid a 15 per cent. dividend and with a capital of 11.2 Mill. RM. devoted 3.8 to depreciation. Since the revival of the international linoleum agreement in March, 1927, and the foundation of the international holding company at Zürich in February, 1928, it has complete control of the German market. There are, in fact, three other producers, the Rheinischen Linoleumwerke in Bedburg (always an outsider of the syndicate) and the Keffel A.G. in Tannenbergsthal in V. and a company in Westphalia, but these are all unimportant.

III. PAPER.

The estimate of the value of paper production is based on the foreign trade return and association output figures.

Although cartels exist in every branch except cardboard, the industry's output is not fully controlled owing to inter-cartel competition:

The Verband deutscher Druckpapierfabrikanten in 1925 included fifty-three newspaper manufacturers,* twelve of whom are insignificant; and controlled over four-fifths of the total output; the remaining manufacturers were organised as a rival association, the Vereinigte Ringfreien Zeitungsdruckpapier Fabriken G.m.b.H. In conjunction with equally well organised industries in other European countries and in Canada it has formed a committee in Stockholm for the purpose of collecting information.

Packing paper prices are controlled by various conventions, of no special interest; the German producers do not co-operate with the central European (i.e. Austria, Czechoslovakia, Jugo-Slavia) cartel. The cardboard branch has been less successful. A sales organisation set up at Dresden would have controlled 80 per cent. of the total German output, but the quotas allotted were never enforced, and the association only fixed minimum prices: two members in February, 1924, gave notice of rescission which the cartel court refused to sanction; it approved the rescission of seven members in November, 1926,† on the same ground, with the result that the selling association dissolved and

* The press does not, as a rule, attempt to acquire manufacturing interest.

† See decisions of February 13th, 1924, and November 8th, 1926: instance of wise policy on the part of the court.

a committee was set up to work in conjunction with the trade association, the Verein deutscher Pappenfabrikanten, and arrange price scales and terms of delivery on a surer basis. Recently the large consumers of cardboard have formed an association to deal directly with the manufacturers. In spite of these arrangements the branch at present works under genuine competitive conditions. In the carton branch organisation has made progress since the war: the first syndicate was founded in 1927.

In the wall-paper branch stimulus to combination came, as it did in the porcelain branch, from the manufacturers of high quality goods, who were obliged to protect themselves against the competition of inferior qualities, the manufacturers of which have little interest in combination, since their margin of profit is so small. The pre-war associations therefore never lasted long, because as soon as the manufacturers of the higher grades had succeeded in fixing prices the manufacturers of low-grade papers began to make higher quality papers. In 1912 the building boom, which had continued since the beginning of the century, came to an end, and the necessity of organisation being greater than before, the Verband deutscher Tapetenfabrikanten was formed, with thirty-one members against twenty-four outsiders. Since the war it continues, carrying on an intermittent struggle with another association.

Most progress in organisation in the post war period has been made in the raw materials and semi-finished products branches.

Before 1928 the rag trade was unorganised: early in the year three purchase associations were formed. The North West German firms originally planned an organisation to include all German dealers: the plan was frustrated by five large South German firms setting up the Sudddeutsche Rohstoffhandels G.m.b.H. in January and four Rheinland firms following their example a month later; the eleven North West German firms, therefore, were obliged to set up a purchasing organisation also. The effect of the existence of three organisations is expected to intensify competition.

In the wood pulp branch, the South German producers had formed a selling association with a price scale before the war; now all the producers are members of the Verein deutscher Holzstofffabrikanten e.V., a price and terms association. The only purchasing association was formed by the Black Forest manufacturers before the war; whether it still functions is not known. In 1927 Sweden, Norway, and Finland producers formed an output-controlling cartel.

Until recently the cellulose branch was unorganised, owing to the prevalence of the connection between cellulose and paper manufacture. The trade association (Verband Zellulosefabrikanten) for many years recommended minimum prices to its

members but did not compel adherence. The market is rapidly expanding with the growth of the artificial silk industry, but in spite of the high quality of the German product, German manufacturers began to feel Scandinavian and Czech competition very acutely in the second half of 1927, and, in order to meet it, set up (in April, 1928) the Sulfitzellstoff G.m.b.H., a central sales company regulating output and prices (excluding only straw and natron cellulose which does not come on the market). The four large firms, Waldhof, Aschaffenburg, Koholyt and Hoesch, control three-quarters of its total output. Immediately after its foundation the German producers succeeded in persuading the Czech industry to restrict its export to Germany and began to negotiate with the Scandinavians for the same purpose.

IV. NON-FERROUS METALS.

100 per cent. output cartel-controlled in 1928.

Copper, lead, enamel : national and international cartels.

Zinc : International cartel, national cartel broke up under pressure of outsiders in 1927, since renewed.

Aluminium : Three large concerns, national and international cartel.

V. FOOD.

Here estimate is difficult as there are no valuations of the output of the groups. The value of the output of beer in relation to the other groups cannot be so high as in Great Britain (according to the London and Cambridge Economic Service index of production, 45 per cent. of the value of the group's output) because sugar is relatively more important ; 35 per cent. can be allowed. The entire output is controlled by the Schulheiss Patzenhofer trust. Another 15 per cent. may be allowed for yeast (trust and cartel), cigarettes (weak price associations suffering from perpetual undercutting), chocolate (price convention), grain milling (local price convention). Concern formation has gone farthest in grain milling, where three great concerns, the Strassburg group, the Deutsche Mühlenvereinigung A.G., and Kampffmeyer, control over 50 per cent. of the total output ; the remainder is produced by thirteen large works sometimes co-operating with the large concerns, sometimes not.

VI. ELECTRICAL.

70 per cent. total output is controlled by the three large combines, Siemens-Schuckert and Siemens and Halske, the A.E.G. with its subsidiaries, the sales association based on the association of Voigt and Haeffner, Sachsenwerk A.G., and a number of smaller firms. But agreements exist between them for certain products only.

The extent of price control in this branch is commonly

exaggerated, for instance, the Beama publication, *Trusts and Combines in the Electrical Industry*, describing the central association, the Zentralverband der deutschen elektrotechnischen Industrie, states that "its main function lies, however, in fixing standard prices, conditions of contract and specification, for the great majority of the products of the industry; it is served by a number of groups devoted to one special branch of inter-related branches, and in some cases not only determines prices but allocates orders. There are few articles not produced in Germany, few contracts, from a complete power station equipment costing hundreds of thousands of pounds, to a small fractional horse-power motor, which are not subject to the control, direct or indirect, of the association. In addition to the central association a number of cartels deal specifically with certain branches which lend themselves more easily to quota production on standard lines and to division between producers on a quota system. Mention should be made in this connection of the Elektrizitäts-Zähler-Verband (Meters), Cable Makers, Insulated Wire Association, Verein deutscher Isolatorenwerke (insulators), heating and cooling apparatus, while other groups have dealt with condensers, insulated tubes, porcelain and ceramics, and a separate union covers contracting firms."

In fact, the central association does not fix or control prices except in so far as it provides methods of price calculation. Of the cartels mentioned, only two regulate output, the meters and cable associations, which allot quotas, but have not succeeded in introducing central sales. The Insulated Wire Association was the only sales syndicate in the industry; it broke up in the middle of 1927—being unable to reconcile the interests of the large and small firms. Two others, insulated tubes and heating and cooling apparatus, never controlled output and have ceased to control prices since 1926 and 1925 respectively. In porcelain the high tension branch is well organised, regulating output, but the low tension branch is not organised at all.

VII. EXPORT GROUP.

(Calculated on export figures.)

	Output. Million RM.	Controlled.
Clocks	100	60
Musical instruments	150	—
Toys	220	—
Pottery	260	240
Glass	440	300
Total :	1,170	600

For extent of combination, see pp. 89-92.

APPENDIX III

THE EXTENT OF RATIONALISATION IN THE HEAVY INDUSTRIES

I. ECONOMIC POSITION OF THE RUHR COAL SEAM

The available evidence as to financial and technical efficiency is hardly sufficient to determine the exact extent to which the industry is working on a non-economic basis. So far as output per man shift and installation of machinery are concerned, the industry's efficiency is increasing.

(1) Monthly Output per Man Shift, Ruhr Area.

	Total employed.	In the mines, i.e., not in subsidiary works.	Underground workers only.
	Kg.	1913=100	Kg.
1913	943	100.00	1,161
1922	633	67.13	814
1923	349	37.01	471
1924	857	90.88	1,079
1925	946	100.32	1,179
1926	1,114	118.13	1,374
1927:—			
January	1,141	121.00	1,387
February	1,147	121.63	1,393
March	1,127	119.51	1,369
April	1,105	117.18	1,357
May	1,117	118.45	1,374
June	1,131	119.94	1,389
July	1,122	118.98	1,379
August	1,125	119.30	1,381
September	1,127	119.51	1,382
October	1,134	120.25	1,390
November	1,153	122.27	1,412
December	1,151	122.06	1,410
Average Year	1,132	120.04	1,385

(The figures produced for the Economic Conference were misleading because the most recent were for 1924 and related only to the Dortmund area. The above figures are the Syndicate's own.) (See *Glückauf*, June 2nd, 1928.)

(2) Installation of Machinery.

According to the report prepared for the Economic Conference, in 1913 only 5 per cent. of the Ruhr coal output was got by mechanical means; and in 1927 only 49.6 per cent. of the

output is got by manual labour and blasting. The Glückauf figures illustrate the change.

No. of Machines Installed.

	1913.	1925.	1926.	1927.	1927 in % of 1925.	1927 in % of 1926.
Hammer drills (Böhrhammer) ..	11,656	36,502	33,104	33,559	- 8.06	+ 1.37
Drilling machines (Drehbohrmaschinen)	37	2,618	1,977	1,700	- 35.06	- 14.01
Hammerpicks (Abbauhämmer) ..	217	41,309	45,299	64,428	55.96	+42.23
Coal-cutting machines (Kohlenschnäider) ..	—	366	233	186	- 49.18	- 20.17
Conveyors (Grosschrammas- chinen)	15	605	470	358	- 40.83	- 23.83
Pillar Conveyors (Säulenschrammas- chinen)	265	866	574	421	- 51.39	- 26.66
Winding engines (Schuttelrutschen- motoren)	1,922	7,175	6,461	6,571	- 8.42	- 1.70

But not much increase in technical efficiency can be attributed to closing down of mines.

In the first great closing down period (1904 and following years) many mines were shut down for natural causes, or else as a result of purchase of quotas by larger mines. The mines closed down in the post-war period, up to 1925, were all exhausted mines on the southern border of the coal-field. To what extent uneconomic closing down has taken place no figures can suggest. No systematic plan has been made for the whole coal-field.

Mines closed down in the Ruhr Area to 1925.

	1923 ..	13	employing	1,500
	1924 ..	24	"	8,398
	1925 ..	31	"	35,810
	1926 ..	19	"	25,293
Total since	1923 ..	87	"	71,000
	Of these	11	with	5,778 employees resumed working in 1926.

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But not much increase in technical efficiency can be attributed to closing down of mines.

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Total since	1923	..	87	"	71,000
	Of these		11	with	5,778 employees resumed working in 1926.

The available statistics of costs of production in the Rhenish-Westphalian coal seam were collected by the Economic Ministry in 1924, 1926 and November, 1927.

Costs in three Ruhr Coal Mines, November, 1927.

	Average cost per ton RM.	% of total costs.
Wages	6.924	56.66
Salaries	0.858	7.02
Total	7.782	63.68
Wood	7.778	6.37
Iron and metal	0.682	5.58
Dynamite	0.169	1.38
Building material	0.102	0.83
Oil and fat	0.075	0.62
Sundry materials	0.246	2.01
Steam, Gas, Current	0.115	0.94
Total	2.167	17.73
Social Insurance	1.065	8.71
Mining accidents	0.129	1.06
Undertaker's work	0.193	1.58
Freights	0.052	0.43
Taxes	0.608	4.97
Overhead charges	0.260	2.13
Total	2.307	18.88
Total 1, 2, 3	12.256	100.29
Minus working receipts	0.035	0.29
Total costs without depreciation	12.221	100

The same mines were not investigated on each occasion, so the results cannot be used as data for arguments about the progress of rationalisation. The three investigated in November, 1927, produce 14.87 per cent. of the total Ruhr coal output, 13.9 per cent. of the coke output; although the proportion is small, the uniformity of conditions in the Ruhr is such that these figures can be regarded as representative.

These statistics were not regarded as important until April, 1928, when the Commission appointed by the Economic Ministry to enquire into "the present position of Rhenish-Westphalian coal mining" used them as a basis for its calculations. The Commission was set up for the same reason

as the Central German lignite commission—for the same reason as the British coal commission—to enquire into the relation between prices and wages, though the actual circumstances differed, in that wages had been raised under a compulsory arbitration award and the minister had refused to sanction a price increase. The Commission decided to confine itself to as narrow a sphere as possible.

According to the Commission's calculations, wage costs amount to 50 per cent. of the total cost per ton, a little more if social insurance and salaries were added. (Compare Annex 9 of the British Coal Commission's report, p. 293.) They took wage rates for granted, as they were obliged to do, and attempted to deal with depreciation allowance, a problem of extreme difficulty in view of the immense capital investments of recent years, and extremely important because it is the only cost which varies greatly from mine to mine and the only item for which the official calculation is unsatisfactory. The Economic Ministry's estimate (1.25 RM. a ton) is no more than an estimate based on antiquated conditions. The majority report recommends a rate of 1.74 RM. per ton of output (coal, coke and briquettes) exclusive of interest charges. The Commission first attempted to calculate the amount to be allowed for depreciation by acquiring information as to the cost of sinking new mines and erecting new coking plant, but found this method impossible. They then drew up a questionnaire, receiving replies from twelve mines, and made a thorough investigation into two mines' value of plant and allowance for depreciation. For the larger mines (annual output 1 million tons) they arrived at a depreciation figure of 1.58 RM. per ton total output and for the smaller mines (annual output 500,000 tons) 1.91 RM. per ton total output. The average of the two is the allowance recommended.

Dr. Baade, while approving the general basis of the cost calculation, prepared a special report to prove that this figure is too high: he considers that in the instances selected value of plant was over-estimated, length of life of plant under-estimated. As his own estimate he offers 1.04 RM. per ton. Consequently the total calculations vary widely: according to the majority report, Ruhr mines are working with a loss of 27 Pfennig per ton of marketable output (i.e., coal and coke) (a total loss equivalent to one-fifth the total British loss, according to the Coal Commission report, on half the British output), which with the higher wage rate will become 1.05 RM. a ton—according to Baade's calculations with a profit of 58 Pfennig a ton. Very little light is thrown on the position of the Ruhr mining *concerns* (as distinct from the mines) chiefly because the Commission, although it examined the financial results of the concerns, could not connect them with its costs calculations.

Profit and Loss per ton Ruhr Coal, Coke and Briquettes.

	Majority Report.	Minority Report.
Costs, according to official figures ..	RM. 13.64	RM. 13.64
Taxation not included therein	0.09	0.09
Costs of accidents not included therein	0.15	*
Depreciation	1.74	1.04
Total Costs	15.62	14.87
Receipts	14.21	14.21
Trade Profit	0.16	0.16
Total Receipts	14.37	14.37
Profit per ton coke	0.95	0.95
Profit per ton briquettes	0.03	0.03
Total Receipts per ton coal, coke, briquettes	15.35	15.35
=Loss of	0.27	0.58=Profit

* The official figures allow .15 RM. which is included in the total costs figure. Dr. Baade considers this sufficient and does not allow the *extra* .15 RM. which the majority report does.

II. RATIONALISATION IN LIGNITE.

Lignite cartels work under peculiar conditions, since although the total output of lignite increased by 80 per cent. between 1913 and 1927, the market remained local. The two chief districts, the Rheinland and Central Germany, exhibit a striking contrast in cartel organisation and exhibit its value and limitations better than any other industry. Producers in the Cologne seam work under uniform conditions, and being situated on the outskirts of the Rhenish-Westphalian area, must compete with Ruhr coal. In the numerous Central German and East Elbe seams conditions vary considerably, and the fuel has only feeble rivals in Saxon and Silesian coal; its use has been responsible for the principal changes of industrial location since the war, indeed for the emergence of a new economic unity, comparatively self-contained and independent of the rest of the Reich to a greater degree than any other area.

(a) Central Germany.

Neither the East Elbe area or the Central German area proper had formed cartels of sufficient strength to overcome the great hindrances in their way in the previous period. The natural difficulties of the wide dispersion of the seams were intensified by the policies of the three Bohemian trading firms, Ignaz and Julius Petschek and Gebr. Weinmann, which acquired several of the larger mines in the early years of the century and caused the dissolution of local cartels. (At present the Petscheks own large properties in all the lignite seams, but only dominate the East Elbe seam where they control the Ilse Bergbau, a mine producing one-fourth of the total output of the area.)

The present organisations for Central Germany and the East Elbe area are compulsory cartels under the coal industry law. Neither are syndicates in the correct sense. The Central German cartel does not sell coal or briquettes or regulate production; it fixes prices but does not compel adherence to them. The East Elbe syndicate sells a small portion of its output direct to large consumers, but does not regulate production and permits reduced prices to meet the competition of Silesian coal (a curious position, since the Silesian coal syndicate is also a compulsory syndicate under the same law). The areas controlled by the two syndicates correspond to no geographical or geological division; in both areas seams lie far apart and conditions of working vary considerably, for instance, in 1925 output per man shift in the Niederlausitz seam was almost twice as great as in the Frankfort seam. In the East Elbe area conditions are rather more uniform because there are only four seams, of which the Niederlausitz is far more important than the three on its borders; the Central German area has nine. Amalgamation of the two syndicates is quite possible, and desirable, since it would reduce cost of management, and obviate waste through unnecessary transport.

So far as rough lignite is concerned the weakness of the two cartels is of little consequence since it has only a local market and the large consumers own mines.* In the briquet market it is

* Ownership of Mines in % Output:—

	C. Germany.		E. Elbe.		Rheinland.	
	Briquettes.	Coal.	Briquettes.	Coal.	Briquettes.	Coal.
Trade	47.5	11	84	46	50	32
Chemicals	33	42	—	—	10	—
Electrical	9.7	30	1.8	23.5	25	60
Iron and Ore	2.8	1.5	2.7	5.8	13	2
Glass	—	—	4	2	—	—
Potash	0.2	5.0	—	—	—	—

injurious, for it permits uneconomic production and directly promotes uneconomic marketing. Neither syndicate regulates production by fixing quotas, and therefore concerns have no inducement to close down inefficient mines. According to an official enquiry made in February, 1926, into the costs of production of fourteen open working mines, in the Central German area, eight of the fourteen were unable to work at a profit at an average price per ton briquettes per cent. 8.85 RM., the highest price reached in the subsequent year, April, 1926, to March, 1927. No economies of production can be realised in this, the only unorganised branch of the German heavy industry, without an instrument in the form of a strong production cartel similar to the Rhenish-Westphalian coal syndicate.

The Schmalenbach commission, which was appointed to enquire into the possibilities of economising costs in order to offset the wage increase which followed the 1927 strike, found that at least half the wage increase (estimated at 56 Pf. a ton briquettes) could be offset by economies in marketing. In the East Elbe area briquettes pass through the hands of two wholesale traders instead of one, a state of affairs due to the preponderance of the Petscheks' influence. Only 7 per cent. of the total annual output of briquettes is supplied by the syndicate direct to large consumers; of the remainder one-third each is sold by the syndicates' firms, by the works' firms and by the free traders; the independent traders, being able to dispose of larger amounts than the quota allotted to them allows them to purchase from the syndicate, are obliged to buy the rest from the works' trade firms. Under the 1927 scale of rebates, the works' firms have an incentive to sell to the smaller wholesale traders because, by selling in smaller quantities, they forego less of the rebate which they receive from the syndicate. Thus the limitation of the free traders' quota and the rebate system combine to raise the cost of marketing.*

In the Central German area, traders have a less pernicious influence because the syndicate does not sell itself and therefore does not allot quotas to the free traders and the works' firms. The works' firms compete among themselves, without restriction, without allocation of markets, without grading or marking the widely differing qualities. As the Commission points out,

* The share of the "works trades firms" is increasing.

Share of total output.	1926-7 (Mill. tons).	1927-8.	%
Syndicate firms ..	4.78	3.85	-20
"Works firms" ..	1.76	3.21	80
Free trade ..	3.94	3.94	(17)

economies in marketing as well as economies in production depend on the existence of a single syndicate strong enough to control the market, an impossibility so long as the Petscheks retain their hold over the East Elbe syndicate. The report is striking testimony to the value of genuine syndicate organisation, and to the failure of compulsory organisation alone, as an instrument of rationalisation, but its recommendations have met with opposition from the industry and trade.

(b) The Cologne Seam.

The producers of lignite in the Cologne seam (the deposits of which are much larger than those of all the other German seams together, though the seam produces only 28 per cent. of the total German output) are in a position in all respects the reverse of that of other German lignite producers.

The seam lies between Cologne, Bonn and Düren, and runs parallel to the Rhine, about 50 kilometres away from it; it is four miles wide by forty-five long. The deposits are very thick, usually 20-25 metres, sometimes 60-100 metres. In the Rheinland, lignite is only a minor source of power as it is inferior to Central German and East Elbe lignite and far inferior to Ruhr coal, and would not be important if conditions of production were not extremely favourable and uniform, and if policy of the syndicate had not been successful and its management admirable. All deposits are accessible by open working, permitting the extensive use of machinery, so output per man-shift is far higher than in the Central German seams; the discovery of a special type of dredging machine during the war is said to have reduced costs by 30 per cent. All producers work under the same conditions and new mines can be easily opened. Since the market is local, it is always threatened by over-production. Without a strong syndicate policy, a steady increase in production would not have been possible, because market fluctuations would have been so great.

As soon as the mines achieved any importance, in the 80's, attempts were made to control the brikett market; at the end of the 90's depression forced two ineffectual organisations to combine. The syndicate did not include four works producing 23 per cent. of the total brikett output, and though that is not a high percentage of outsiders, it was too much for a lignite association, which must be all-inclusive since new mines can be so easily opened. In 1902 all the twenty-one works of the Cologne seam formed the Braunkohlen Briketts Verkaufsverein, G.m.b.H., Köln, the oldest established coal syndicate which has functioned uninterruptedly. Its first triumph was the purchase and closing down of the old mine "Theresia" which an outsider had

bought and prepared to work. At an early age it began to compete with the Ruhr coal syndicate in the South German market and resisted the coal syndicate's attempts to incorporate it. It has been successful because it has solved two problems which confront the heavy industry: it has regulated self-consumption and subdued the wholesale traders. But the real cartel problem—restriction of output—has never troubled it.

It has only been able to regulate self-consumption because it does not control the production of raw lignite, not because concern consumption is unimportant. Fifty-four per cent. of the syndicate's total output is produced by the two great firms; Roddergrube A.G. (four works) and the Rheinische A.G. für Braunkohlen-und Brikettfabrikation (ten works). Three smaller concerns, an Interessengemeinschaft of three firms with the works of the I.G. Farben Industrie, and the concern of the Horrem Brikettfabrik, have quotas of 7.5 per cent., 5.5 per cent. and 4.5 per cent.; the remaining 28.5 per cent. is divided between twenty-one companies whose shares run from 0.94 per cent. to 3.4 per cent. All the large concerns have connections with consumers who take all their rough lignite output. More than half of the Rheinland's electrical power supply is produced by five great stations using lignite as their chief form of fuel.* During and after the war, other industries secured supplies of raw lignite, the dye branches of the chemical industry, a nitrate factory at Grevenbroich and an electro-steel works at Bonn. The market for rough lignite cannot be controlled by the the vertical nor has it attempted to control it since 1923, since syndicate connections of the producers absorb all their production.

The market for briquettes is wider, and the syndicate fixes a self-consumption figure for the supply of mines' own needs, though not for the needs of undertakings which have only agreements with mines and are not their property. When the syndicate began, 80 per cent. of its total output was exported: the increase of export was one of its chief objects. By 1913 the

* The shares of the Bergeist mine came into the possession of the Rheinische Westphälische Elektrizitäts Gesellschaft which had previously used only hard coal, in 1906 and 1911; when in 1913 its supplies were insufficient, Stinnes made a long term contract with Roddergrube to supply the great Goldenburg works; in 1921 the R.W.E. took over the management of Roddergrube, much against the wishes of Roddergrube's shareholders. The two Fortuna Stations, and the Zukunft Station have been the creation of the lignite industry itself. In 1910, the Rheinische A.G., für Braunkohlen Bergbau-und Brikettfabrikation constructed the Fortuna I. power station in Cologne, and in 1912 agreed with the municipal authorities to supply it with current; the second Fortuna station they finished in 1922, as the first station alone could not supply all the Cologne current. The Zukunft station was completed by the Braunkohlen Industrie A.G., Zukunft in 1913, to supply the Aachen district.

export market was relatively unimportant ; the syndicate had created a new inland market for itself without assistance from the traders whom it had brought completely under its control. The syndicate has not attempted to include the traders as the coal syndicate has done, or to set up its own selling organisation because it has no need to do so ; it divides its market into sixty-two districts, each of which is shared by several traders who may not—and do not—sell outside their own district—an arrangement which survives from the fuel shortage period when it was desirable to distribute fuel supplies as evenly as possible ; its present object is to enable traders to consider the needs of their own district. The trader may not make exclusive contracts or allow his customer bonuses, lest he should acquire a monopolistic position ; for itself the syndicate has no such fears and will not allow him to sell lignite produced by firms not members of the syndicate. The penalties for breaking the syndicate's rules are heavy, but they are rarely broken, for though severe, they are uniform.

The syndicate is a compulsory organisation under the Coal Industry law. But would continue to exist if the law were repealed. It is one of the best established organisations in Germany today, but since its strength has never been tested by the necessity of reducing output, it cannot be regarded as a model for other cartels.

III. THE PROBLEM OF RE-ORGANISATION IN THE ROLLING STOCK BRANCHES.

Even before the war the railway waggon industry was only occupied to 80 per cent. of its capacity, but in the war and post-war period, as a result of the great construction programme undertaken by the Reichsbahn, it doubled its production capacity ; by 1923 there were seventy works in the branch against forty before the war. Since the sudden reduction of the Reichsbahn's orders caused by stabilisation, the industry existed for four years in a state of crisis, which attempts at organisation did not succeed in relieving. In 1926 eight of the larger firms began to negotiate for fusion : Linke Hofmann and the Gothaer Waggonfabrik in Uerdingen set up a study company to investigate, which found that fusion was not desirable (previously the only organisation had been two loose price conventions) but recommended as an alternative an association to the members of which the Reichsbahn should allot quotas. This the Reichsbahn agreed to do, on the condition that the thirty members of the association should "rationalise" their methods of production : but not a single attempt at rationalisation was made by any firm during the first years of its existence. Two groups crystallised

among the members: the Western group,* amalgamated in October, 1927, and the Eastern group† in May, 1928. Fusion is not likely to take place between the South German works which are departments of larger concerns. The Western trust is over-capitalised; experts consider that for every 1 per cent. Reichsbahn quota half a million RM. capital is sufficient; the trust has a capital of 11 Mill. RM. and a quota of 13½ per cent., i.e., about 830,000 RM. for every 1 per cent. The same must apply to the Eastern group, which will control 25 per cent. of the Reichsbahn's orders, with a capital of 30 Mill. RM., but no exact calculation can be made because the fusion was carried through by Linke-Hofmann, a general engineering firm, raising its capital and exchanging shares with the other two.

The problem in the locomotive branch is even more acute. The number of locomotives constructed for the home and foreign market declined from 4,052 in 1913 to 615 in 1926, having reached 5,370 in 1921 under the influence of inflation. The Reichsbahn's orders for locomotives have declined to a greater extent even than its orders for carriages, on account of technical changes—adoption of the through brake, re-organisation of repair shops, and the decline of passenger traffic. In addition the branch has lost all its export markets. Organisation to restrict output is even more difficult than for the carriage makers, for all the works, with one exception, are departments of large firms: trustification is impossible even if a trust could include so many as twenty works. Since the expiry of the contract of the association—never very strong—in 1927, the branch has been unorganised. Had the waggon builders' association been successful, the locomotive branch might have attempted something similar. As it is, no effort was made to improve the situation beyond the petition presented to the Reichswirtschaftsminister by four leading firms. The petition suggests that the Government should grant a credit of 50 Mill. RM. to the Reichsbahn for new orders to be allotted among the larger works, and that it should give financial assistance to the smaller works which would receive no orders to enable them to convert their works to other branches of machine construction. The minister refused the petition on the ground that special credit facilities would only provide artificial and temporary relief and postpone real re-organisation. Subsequently

* The Western group consists of:

Waggonfabriken von der Zypen & Charlier in Köln, Düsseldorfer Eisenbahnbedarf, Killinger & Sohn.

It was expected that other firms would join and bring the trust's quota up to 20 per cent., but in January, 1928, this had not taken place.

† The Eastern group includes:

Linke Hofmann in Breslau, Busch in Bautzen, Sächsischen Waggonfabrik, Werdau.

several specialisation contracts accompanied by restriction of output have been made, one of which will be accompanied by amalgamation.

Other branches faced by the same problem have been able to solve it by amalgamation because producers in each branch are few. Three large boiler-making firms amalgamated in September, 1927, with the assistance of Demag. The boiler tubes branch made plans for a similar amalgamation at the beginning of 1926, which it abandoned in the middle of 1927 when revival seemed to diminish the necessity. The three firms manufacturing ore-dressing machinery amalgamated in November, 1927, forming the Aufbereitungs A.G. in Essen.

IV. RATIONALISATION CARTELS.

Specialisation by cartels is possible but not usual, and is very rare, if the number of members exceeds three or four. The typical agreement is signed by two or three producers, rarely by all manufacturers of the branch. If there are more than three or four members, thorough specialisation is bound to entail financial loss for some firms, which must be made good by a scheme of profit-sharing, equivalent to loss of financial independence. The object of the following list is to estimate as exactly as possible the prevalence of agreements of this kind and to suggest reasons for their success in certain branches.

Specialisation Agreements.

Branch.	No.	Date.	
I. Machine Tools and Mechanical Tools	3 of 3 firms each.		In three branches, boring machines, turning lathes, and milling machines, groups of three firms have successfully specialised by agreements. Other groups of firms in the same branches have advanced no further than negotiations. Branch after branch reports failure to achieve organisation of any kind.
Wood-working machines	?	1924	The firm Maschinenbau Balcke A.G. in Bochum agreed with several North German door and window glass manufacturers to standardise and modernise their works, and to take over their sale of products, purchase and distribution of raw material.

Specialisation Agreements.

Branch.	No.	Date.	
II. Textile machines	14	1923	"Unionmatex." Five firms (now increased to fourteen) agreed to specialise. No central management and therefore no compensation or profit equalisation: has only partially specialised. The Central bureau acted at first as an official for information; now undertakes sales for certain area and partially for export; advertises, and cost is shared by members.
V. Diesel motors		1927	The Motorenwerke Mannheim vorm. Benz had made three Interessengemeinschaften with three companies for specialisation on certain kinds of Diesel motors.
VI. Pumps	3, 2, 2	1924 & 1927	Three agreements between three groups of firms 2 and 2, for specialisation.
VIII. Mechanical Transport	Several —2	One before war; one 1925	The pre-war agreement was signed by several firms, for thorough specialisation, with trustee to supervise. The 1925 agreement signed by two firms for specialisation.
IX. Envelope machines	6	1917	Verband deutscher Kuvertmaschinen-fabrikanten. In this small branch (400 workers) the five firms have been able to carry out complete specialisation by cartel agreement under peculiar circumstances. Their market is in fact guaranteed, for the incentive to organisation came from their consumers, the envelope makers' association, which threatened to boycott the machine-makers and manufacture machines on their own account if the machine-makers continued to sell to the outsiders of the association. A reciprocal contract was made in 1913 under which the envelope-makers guaranteed to the machine-makers a volume of orders equal to the average of the three previous years. The guarantee clause is no longer in force but the effect of the contract has been to secure the market to the machine-

Specialisation Agreements.

Branch.	No.	Date.	
Printing machines	24	1920	<p>manufacturers, while it has not checked the delivery of machines to non-members of the envelope-makers' association, who take about 30 per cent. of the machine association's output. The machine-makers' association has only two outsiders, one unimportant, the other Winkler and Dunnebier, manufacturing a special machine for mass production; the latter are permitted to supply the envelope-makers under a special contract and negotiations to draw it into the cartel are in progress.</p>
			<p>As a result of the specialisation contract made in 1917, each firm now manufactures three or four machines instead of twenty as before; prices have not increased anything like in proportion to the increase in prices of raw material and costs have been reduced by about 30 per cent. Clearly the success of the specialisation programme is due to the exceptionally strong position of the manufacturers compared with that of their consumers.</p>
			<p>The Vereinigung deutscher Druckmaschinen developed from a trade association and began to act as a cartel, fixing prices and terms, in 1920; unlike other cartels in this branch its activities were not disturbed by the events of 1924 and 1925, but in 1926 it was at last obliged to relax its regulations which were reinforced in 1927. There are a few important outsiders responsible for 6-7 per cent. of the total German output.</p>
			<p>Rationalisation in this branch means standardisation rather than specialisation. Attempts have been made by its nine groups, which have for the most part failed. Standardisation of machines must be preceded by standardisation of</p>

Specialisation Agreements.

Branch.	No.	Date.	
	6	Dec., 1925	<p>parts, which the industry regards as impossible, because standardisation is specially difficult for the large firms which should take the lead, because they construct large machines of very different types.</p> <p>Only one group, the lithographic machine-makers, has succeeded as a specialisation cartel and was instituted as such. Its six members now manufacture only two or three types of machine (instead of in one case forty-eight) and output is restricted. The specialisation contract was accompanied by a compensation fund and fairly elaborate regulations which have worked well. The exceptional success of specialisation in this branch is due to the increasing use of the offset machine which has gradually been displacing the lithographic type since the war; manufacturers were obliged to limit their output and specialisation was a convenient accompaniment. Further, the usual risk of specialisation is absent because all firms but one manufacture other printing machines. Successful specialisation in a permanently depressed branch is uncommon.</p> <p>Another group, the Verband deutscher Rotationsmaschinenfabrikanten, has achieved a high degree of organisation unaccompanied by specialisation. On account of the large size of the machines the manufacturers found it desirable to stabilise employment by pooling orders. Consumers object to this arrangement alleging that orders given to one factory are transferred to another without their consent and executed on different lines. In consequence of the complaints made by them before the Enquête-Ausschuss the group abandoned the pooling arrangements and substituted for it a system of output control.</p>

Specialisation Agreements.

Branch.	No.	Date.	
X. Refrigerators and cooling plants	2, 3	1927	Borsig and Mannesmann specialise in certain branches.
			Maschinenfabrik Augsburg Nürnberg, Maschinenfabrik Esslingen and the Linde concern specialise. There are forty to fifty firms engaged in this branch, but these five firms dominate the industry.
XI. Casting machines Electro-technical Furnace Construction	3-4	1919 or 1920	Specialisation and central sales.
	3	?	Specialisation and central sales.
	3	1928	Demag, Central German Steel Works and Martin & Pagenstecker in Köln founded a holding Company to re-organise their plant.

V. INVESTMENT IN THE HEAVY INDUSTRY, 1927.

	Loan.	Share issue.	Purpose.
Klöckner	Germany : 40 Mill. RM. 1926	20 Mill. RM. Dec., 1927	New steel works at Haspe, cement works at Osnabrück, new Thomas furnaces.
	Holland : 8 Mill. Lf. 1927		Synthetic nitrate enterprises with which potash interests are connected.
Hoesch-Köln-Neuessener Bergwerksverein	Germany : 18 Mill. RM. 1926	32 Mill. RM. 1928	Modernisation of steel works and rolling mills, construction of new blast furnace as substitute for three existing ones, with object of installing plant for the continuous use of blast furnace gas and a central power supply for the Dortmund plant; re-organisation of the finishing works to deal with a larger proportion

APPENDIX

	Loan.	Share issue.	Purpose.
			of the semi-finished steel. Thirty new coke furnaces at Kaiserstuhl II. mine, a new coking plant at its Emscher shafts and additions to the coking plant at Altessen. Patents taken out for a new steel process for direct production from ore.
Gütehoffnungshutte (Haniel) ..	U.S. 7½ Mill. \$ Nov., 1925. 2½ Mill. \$ Feb., 1926.		Enlargement of blast furnaces; construction of cement works at Oberhausen.
Mannesmann ..	U.S., 5 Mill. \$ 1926	44 Mill. RM. 1927	New coking plant and blast furnaces at Hückingen, which will make it a complete vertically integrated concern.
	Govt. loan of 8.5 Mill. RM.	20 Mill. RM. 1928	18 Mill. RM. of the 1927 issue paid off American loan. Govt. loan granted to retain property in Morocco.
Krupp	U.S. 10 Mill. \$ 1925 60 Mill. \$ 1927 9 Mill. RM. profits invested in addition to loan.		Complete re-organisation.

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* This fault is corrected by a calculation in *Wirtschaft und Statistik*, No. 3, 1928.

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Cartels.—The Statistisches Reichsamt has much information of which nothing is published but the numbers (incomplete) of associations in each industry, under the headings "Reichsverbände" and "Landes-und Bezirksverbände" occupied (1) with economic questions only (i.e., not trade organisations), (2) with special economic questions only (the cartel proper), (3) with economic and labour questions (not necessarily cartels at all).

These results are published in *Statistisches Jahrbuch für das Deutsche Reich*, 1927, p. 510, and in *Jahrbuch der Berufsverbände im Deutschen Reiche*, Ausgabe, 1927. Sonderheft zum Reichs-Arbeitsblatt No. 36.

(ii) *Size, Number and Location of Undertakings.*

Wirtschaft and Statistik, 1927, No. 4 and No. 16, first results for the Empire of the *Betriebszahlung* of 1925. For difficulties of comparison with 1907 results see W. and S., 1926, No. 16, p. 572.

This census is the first since the war: the results hitherto (December, 1927) published use the pre-war unit to define the undertaking. The last pre-war census for which results are published, 1907, used methods so different that comparison with it is not possible. The 1913 census results, if they are ever published, probably would provide a basis for comparison. The complete 1925 census will use a threefold classification, i.e., as well as *örtliche Einheit*, *technische* and *wirtschaftliche Einheit*. The last classification will resemble the American "Central office" classification (see Thorpe, *Integration of Industrial Operation*) and will, therefore, give direct information about combined management.

The only *annual* statistics are those published by the Gewerbeaufsicht authorities (factory inspectors). These refer to about 80 per cent. total number of establishments: up to 1920 they did not include establishments employing under ten workers; since then they do not include establishments employing less than five. They only include power-using establishments.

Location.—The material used by all writers on industrial location since the war is *Die Arbeiterverteilung in der deutschen Industrie*, 1922 and 1924, not comparable with census results.

(iii) *Production.*

Monthly official statistics are issued for production of coal, coke and by-products, lignite and by-products, potash, pig iron, steel works and rolling mills products, other metals, and sulphuric acid. These are available in *Wirtschaft and Statistik* each month, and in the *Vierteljahrshefte* and the year book for the annual results.

The coal, lignite, potash, iron and steel syndicates also publish statistics of monthly output and employment which are available in *Glückauf* monthly.

The *Produktionserhebungen* are censuses taken originally for tariff-making and military purposes of the volume and value of the annual output of certain industries. The first, taken in 1898 for the 1902 tariff, was the widest in range, including mining, iron, chemicals, rubber, celluloid, cement, pottery, glass, paper, some branches of textiles, leather, tobacco and starch, women's and children's clothing. The 1907 census only included the more important branches. The results of the 1913 census are not yet published. Thus, there are available, so far as pre-war official statistics are concerned :

Mining : Continuous since 1860, modernised 1913.

Chemicals : 1898, 1907 for cokery products and sulphuric acid. Annual for potash since 1860.

Textiles : Cotton, 1907 ; worsted, 1897, 1907-8-9 ; linen, 1907-8-9.

Power-driven vehicles : 1901-3-6-10-11-12.

Leather : 1898-1910.

Food Industries : 1907.

There was never a general census, except in Bavaria in 1913, the results of which were not published.

These were resumed in 1925 and 1926 ; results are available for :

Textiles : *Wirtschaft and Statistik*, 1927-9, worsted washing and combing, worsted spinning ; 1917, cotton-spinning ; 1918, jute ; 1921, flax-spinning ; 1922, hemp ; and 1928, jute. So far as method is concerned these are comparable with the pre-war results, but offer no indication as to the effect or loss of territory (which affects cotton results most seriously). Provide information as to prevalence of commission work and integration of processes, value of raw materials.

Electrical Power : 1925-6.

Leather : 1925-6.

Power-driven vehicles : 1925-6.

Estimates of the total value of German industrial production are made by Hirsch in article in *Strukturwandlungen der Deutschen Volkswirtschaft* and in *Vierteljahrshefte zur Konjunkturforschung* 2 and 3, 1927 ; of value of textile production before the war by Kertesz, *Die Textilindustrie sämtlicher Staaten*, 1917, of the proportion of output exported in *Vierteljahrshefte zur Konjunkturforschung* 3, 1928.

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Association Statistics have made great progress in the last few years. Most of these are collected for the purpose of business forecasting.

Engineering.—The Verein deutsche Maschinenbauanstalten alone of the great industrial associations collects statistics of costs, orders received, employment and output and publishes some of its results, together with information as to the size of firms, fusions, cartel formation.

Mining.—One small association, the Verein für die bergbaulichen Interessen Niederschlesiens, has very complete material as to costs, output per head, stocks, output. Other syndicates output and output per head only.

Paper.—The Central Association collects output statistics for paper, pasteboard, wood pulp, cellulose, rags, circulates them among its members and supplies the Institut für Konjunkturforschung with data which are not published.

Textiles.—Certain textile associations supply the Institut für Konjunkturforschung with data for its production index, not published. One or two collect figures for forecasting purposes.

Pottery.—The cartel has collected statistics since 1922. These are available in Vershofen: *Die Lage der deutschen Porzellanindustrie in den Jahren 1925, 1926 und Anfang 1927*, very complete information as to costs, output, employment, utilisation of capacity.

The retail traders and the association of consumers' co-operative societies (Edeka) have collected statistics of turnover for the last three years.

In some industries no figures, either official or private, are available, chemicals being the outstanding example. The German association prepared the estimates of world production for the Economic Conference; the only other figures for German output appear in the U.S. Department of Commerce reports, the source being presumably the reparation authorities. The D.O.C. reports are the only source of information for glass and clock manufacture.

(iv) *Balance Sheets of Share Companies.*

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(v) *Prices.*

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Allgemeine Statistisches Archiv, Vol. 16, part 4, explains the composition of the new official wholesale prices index numbers.

Institut für Konjunkturforschung, two price indices.

(vi) *Foreign Trade.*

Der Auswärtige Handel Deutschlands, Vol. 339 of Statistik des Deutschen Reichs for 1926 compared with 1913 and 1925.

In these volumes only the headings of the International Classification are given with 1913 values, therefore more convenient to use *Der Deutsche Aussenhandel*, prepared for the Foreign Trade Committee of the Enquête-Ausschuss, gives 1913 values for 1925 trade for each heading for each country, and therefore slightly different results for the totals in the International Classification. Also an index number to show divergence of volume and value changes.

(vii) *Costs.*

See sections on Coal, Iron Ore and Lignite : no other material.

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