

**THE LOGIC OF
INDUSTRIAL ORGANIZATION**

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THE LOGIC OF INDUSTRIAL ORGANIZATION

By

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LONDON

KEGAN PAUL, TRENCH, TRUBNER & CO. LTD.

BROADWAY HOUSE, 68-74 CARTER LANE, E.C.

1933

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PREFACE

THE development of the world economic crisis appears to have reached a stage when attention may again be turned to its industrial aspect. The problems of industrial incentives and control, of hours of work, wages and profits that are being so conspicuously tackled in the United States are perhaps in the long run of equal importance to the monetary factors that have occupied economists in the last few years. It must not be forgotten that before the world crisis overtook her, England had been suffering from a persistent unemployment rate of ten per cent. If this is not to be repeated in the next period of 'prosperity', changes must certainly be planned ahead in the structure of industry. No apology is needed for introducing a book on industrial organization and efficiency among the present crowd of publications on money and finance.

Industrial efficiency is not, however, assumed the be-all and end-all of the life of the community. Indeed I heartily sympathize with the type of industrialist, described in the text, who prefers to sacrifice some efficiency—and profit—for the sake of added leisure. The thesis advanced in my *Uplift in Economics* that there should be social sciences free from controversy about ends appears as necessary as ever before. In this present book efficiency duly defined and limited in its scope is taken simply as one consequence that is important enough to mankind to justify the investigation of its causes

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in a purely indicative mood. There are undoubtedly equally if not more important ends for human beings to strive for, but the ranking of such ends in order of merit is not my present object.

A further thesis, illustrated at some length in my *Statistical Method in Economics and Political Science*, is developed in this book. Hitherto the study of industrial organization has been limited almost entirely to descriptions of existing industrial forms. I believe that knowledge how logically to plan industrial structures and functions would gain greatly if the study of industry were linked more closely with both economics and political science, provided these sciences are prepared to build upon a basis of facts accurately measured by statistical methods, and to interpret results in the light of modern psychology.

Economics deals mainly with the amounts of various goods and services provided and exchanged and the exchange values—prices, costs and other payments—so created. But it is doubtful how far these terms of exchange can usefully be studied in the abstract without reference to the persons and organizations of persons effecting production and exchange. In his *Organization of Farming*, Mr. G. T. Garratt has distinguished between clean boot and dirty boot farmers, and clearly the difference in mental attitude and in division of labour that is implied will affect the costs and output of these producers. Similarly, the several types of industrialists and of industrial organizations that I distinguish in Chapters IV and VII will affect the economics of industry. To supply a real context for economic generalizations and to see the working of economic institutions as a whole, therefore, a new political science must be developed that will

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not be restricted to matters of State but will deal with methods of organization—methods of rule, methods of appointment, methods of sharing work, for whatever purposes these methods are instituted.

Parts of my manuscript were read by Mr. E. A. G. Robinson, Mr. James Walker, and Mr. Hugh Weeks, and I should like to express my gratitude for their helpful criticisms. Chapter IV, §§ 2-4, dealing with the insistent problem of shorter hours of work as a cure for unemployment, is part of a report that I drafted for the British Section of the International Association for Social Progress, which will be published shortly. Finally, I want to thank my wife, Lella Faye Secor, for her untiring efforts in reading manuscript and proof.

P. SARGANT FLORENCE.

BIRMINGHAM, 1933.

THE LOGIC OF INDUSTRIAL ORGANIZATION

CHAPTER I

THE LOGIC OF LARGE-SCALE OPERATION

§ I. *The Structure of Industry*

IT is generally agreed that the chief characteristic of modern industrial organization is large-scale production. From this we need not dissent provided we understand the nature, implications and limits of this new large-scale development. It will be necessary to enquire more closely into the meaning of this well-worn phrase.

Economists, when they expound such theories as the law of increasing return, use large-scale industry to refer to the production of a large number of the same 'commodity'. The return per unit increases as more units are produced. But when it comes to describing the facts of industry, both economists and mere descriptionists slip into the practice of using large-scale industry to refer to an industry that contains large firms or plants. These two conceptions are by no means identical. Many a large firm or plant may, by engaging in a great variety of different 'lines', produce each in very small amounts; and many a small firm by specializing in one or a few processes or lines may produce each line in large

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amounts. I propose in what follows to use large-scale production to refer to the quantity of particular products or transactions, and large-scale organization to refer to the size of particular plants or firms.

Now modern industrial development is marked off from earlier forms of organization both by large-scale production and large-scale organization. Its mass-production, specialization and standardization imply large production; its trust and combination movements and its mechanization, large firms and plants.

The starting-point for studying modern organization might equally well be large-scale production or large-scale organization. If the aspect of industry concentrated upon is the sociological situation and industry is looked upon as a universe of human beings or (to quote the title of Graham Wallas's classical work) as a Great Society, then the most direct approach will be through organizations of human beings that are called plants and firms.

The plant, regarded sociologically, is a congregation or body of persons assembling together at a certain time and place,¹ and in this respect it is similar to the congregation of a church, a political meeting or a school. It is a grouping of people in and around certain places where they work. It includes farms, mines, building operations, stations on railways, ships, offices, shops where selling is going on, warehouses, and, in England most important of all, workshops and factories manufacturing goods. These factories and offices and shops are not merely themselves *congregations* of workers but tend to become part of a localization of congregations; they form

¹ For the distinction between a 'body of persons' and other organizations, see Florence, *The Statistical Method in Economics and Political Science*, Chapter XIX.

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industrial towns that are extremely important factors in the development of industrial technique. But the industrial unit of government that is equivalent to the political state is not the plant; the plant is merely a congregation of people, a 'body of persons' who happen to work together at certain places at certain hours. The unit of government is *the firm* or, as it is variously called, the undertaking, the enterprise, or the concern. In multiple shop businesses, such as Boots or the Maypole Dairy, it is not the shop that is the ultimate unit of government but the whole firm. If the plant is *the congregation*, the firm is *the Church*—the body that controls and is superior to the more visible congregation. Some plants may be identical with the firm—there are many firms, of course, with only one plant; but there are many other plants that are subsidiary plants, merely branch businesses of a main concern. And one firm is often the result of amalgamation of several firms in the past. But whatever its history the new 'Combination' or 'Trust' if it is under one control or government counts simply as one firm.

From the standpoint of human organization, then, an 'industry' is simply a sum of firms or plants. An economist has recently gone so far as to maintain that "industries as such have no identity. They are simply a classification of firms which may for the moment be convenient."¹ According to this view *an industry* is a number of people, and that number is obtained by an addition sum of all the people in certain plants or firms. Just as the population of the country consists in the population of the counties within that country, so the population of industry consists of the population of the plants

¹ E. A. G. Robinson, *The Structure of Competitive Industry*.

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scheduled as within the industry. The practice of the national census certainly lends colour to this view. As the official explanation has it :

“ The Industry to which each individual is classed has been determined (whatever may have been his occupation) by reference to the business in, or for the purposes of which his occupation was followed. Where the individual was himself an employer or was ‘ working on his own account ’, his business or profession has been regarded as the industry ; but in the most usual case of individuals working for an employer, it is the nature of the employer’s business which has determined the industry under which such cases have been classified.”

This purely additive conception of industry runs counter to the more popular notion of industries as easily distinguishable by the type of work or transaction in which they are engaged. A particular industry is supposed—without reference to any organizations such as plants or firms—to be engaged on specific transactions. Industries are at first divided up according to the general process performed, such as mining, agriculture, transport, manufacture, building, distribution or personal service ; then further subdivided either according to the material worked upon or worked up such as manufacture of textiles, metals, etc., or according to the need supplied, such as manufacture of clothing, foodstuffs, etc.

A compromise between the popular technical or transactional notion of an industry and the sum-of-firms notion, is afforded by a definition I put forward some years ago that an industry is

“ any kind of transaction (or series of transactions) for exchange (production, distribution, services, etc.) usually specialized in by a group of firms who do not usually perform other transactions. Thus transport or coal-mining is an ‘ industry ’ because there are special transporting or coal-mining firms who do not perform much of any

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other transaction, though they may provide a fraction of hotel accommodation, or coking and gas production.”¹

This definition maintains the popular idea of similarity of transaction throughout an industry, but avoids the conception of a certain classification of industries being something inevitable where each industry is a logical category immutable and pre-ordained. The facts are that as firms give up old transactions and take on new, industries are continually changing in content and continually branching off into separate industries. There are, for instance, new industries separating off from engineering, such as the machine-tool making and the tube-making industry; and from the textile industry are branching off the rayon or the waterproof industry. Professor Allyn Young indeed considered that “the progressive division and specialization of industries is an essential part of the process by which increasing returns are realized”, and that “industrial differentiation has been and remains the type of change characteristically associated with the growth of production.”² At the same time industries are also to be found coalescing. A plant will take over various sidelines: a brass-bed plant will make wooden beds and iron beds. That is known as ‘broadening the basis’ of their operation. Another example can be taken from leather works turning out fancy goods because the market for saddles is decaying with the gradual obsolescence of horses.

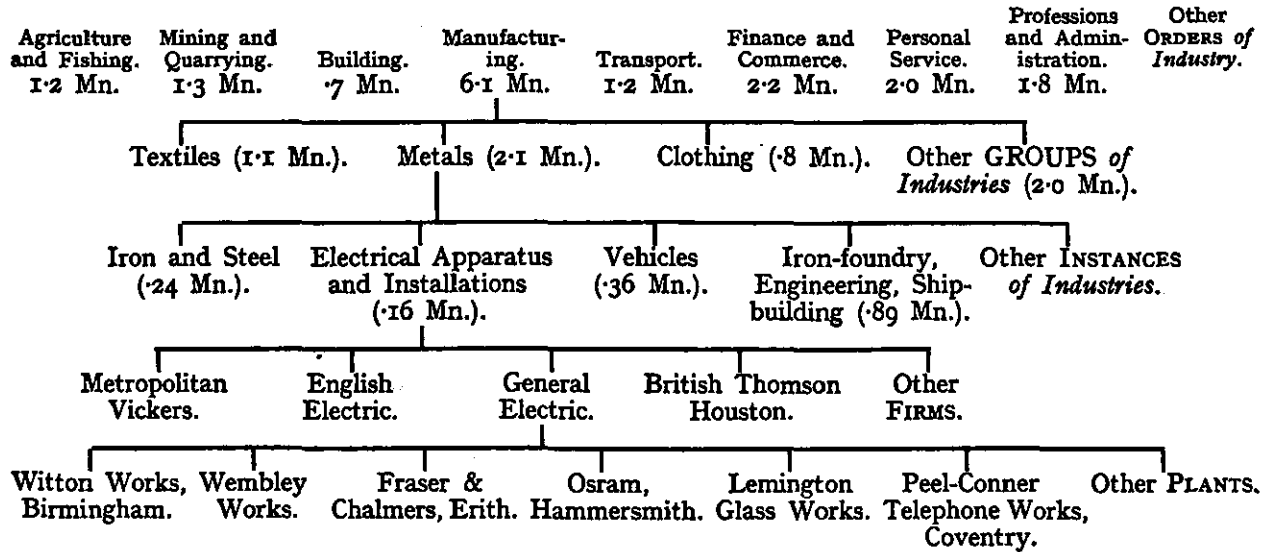
With these warning notes as to the complexities, fluctuations and uncertainties in the content of an industry, Table I may be presented as an attempt to show the bare structure of the whole of industry in

¹ Florence, *The Statistical Method in Economics and Political Science*, p. 366.

² *Economic Journal*, December, 1928, pp. 539 and 537.

TABLE I

THE STRUCTURE OF INDUSTRY BY ORDERS, GROUPS, AND INSTANCES OF INDUSTRIES, FIRMS, AND PLANTS
 (Numbers Employed given in Millions)
 England and Wales, Census of 1921



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England. In the top line or tier are shown what the Census calls the "Orders of Industry", together with the millions employed therein in 1921: agriculture and fishing, mining and quarrying, building, manufacturing, transport, finance and commerce, personal services, professions and administration. These orders include practically the whole of the occupied population. Take the most important order, that of manufacturing, which employs just over 6 million people. The whole order is divisible into various *groups* of industries: the textiles working in particular kinds of material, the metals working in another kind of material, clothing industries producing a definite product; and there are other groups of industries—too many to be put into this tier of the diagram. But under each group there are included what may be called '*instances*' of industries or *specific* industries, viz. the iron and steel industry, vehicles, electrical apparatus, ironfoundry, engineering and shipbuilding, together with many other industries all coming under the Metals Group.

The difficulty is to know where to stop in the splitting up of industries. If carried far enough one would come down ultimately to the production of a single sort of commodity. In fact, some industries which are officially recognized, like the hammock, wheelbarrow and oakum industries that figure in the U.S. Census of Manufactures (and in 1909 employed a total of 345, 408 and 136 wage-earners respectively), are almost of this simple nature. More usually 'an' industry however specifically analysed out includes the production of many different articles and must remain in the economists' theoretical view a group of industries. There is therefore no purpose in introducing any more tiers into the diagram and we may proceed by choosing Electrical

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Apparatus as a typical instance of 'an' industry, and coming down definitely to the firm. Several well-known firms in the electrical apparatus industry are cited in the table, such as Metropolitan Vickers, English Electric, General Electric, British Thomson Houston. Take again only one firm, just as previously only one order, one group and one specific industry, was taken. The General Electric controls a group of plants at Witton, Birmingham, and has control over the Fraser & Chalmers Engineering Works, works at Wembley, the Osram Works at Hammersmith, the Lemington Glass Works near Newcastle-on-Tyne, the Peel-Conner Telephone Works and several other plants.

Under systems of private enterprise the government of industry in the strict sense of government, that is, the issuing and receiving and obeying of commands, only occurs within the firms. The General Electric as a whole does not take commands from anybody. There is no one controlling the whole of the electrical apparatus industry from which the General Electric would take orders. Much less is the metal group organized as a whole. Thus the unit of government comes very low in the whole scheme, and all the rest is actually an anarchy; there is no one organizing the whole of industry, telling each industry how much output there should be or what prices to charge. There is no one organizing a group of industries or any specific industry. It is not until almost the bottom of the diagram is reached that we can detect government in the sense of giving and receiving commands and obeying orders.

Within the governing or 'rule' unit of the firm, a number of plants may be organized. It is here that the contrast of the Capitalist Economy as against a Planned Economy such as Russia has established is most striking. In the lower tiers of industrial

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structure the Russian organization is surprisingly similar to that illustrated in Table I. There are 'Enterprises' corresponding to the capitalist plants or establishment, controlled by 'Trusts' corresponding to capitalist firms. Except that firms compete whereas Trusts do not, the lower tiers of the industrial structure is in fact neither distinctively capitalist nor communist but a technical necessity. Under any system of industrial government it would be necessary to have plants of various sizes where the power, the machines, the managers, the skilled and unskilled labour may congregate and mutually assist one another. In no other way can modern inventions be exploited to their full economic advantage. Moreover, these plants occurring at a given place and working at given times may advantageously under any system of industrial government be combined in larger organizations, such as firms or trusts who will buy the common raw materials, despatch the common products and control finance. But at this level in the industrial structure the similarity between capitalist and planned economy ceases.¹ Whereas under capitalism there is no organized rule superior to the firm, in Russia there are for each of several specified industries Central Corporations which control *all* the organizations for technical production in those particular industries; and these Corporations may only act in accordance with the planned assignments of a Supreme Council of National Economy that controls *all* industries. Thus in the upper tiers of the industrial structure the planned economy of Russia introduces an organized rule of the whole industry

¹ Indeed in Russia the trust is now (1933) apparently being liquidated and the parallelism with capitalism cut short at the plant.

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and the whole national economy, where such rule is absent in capitalist countries.

This planned economy results in a simpler (though not necessarily more efficient) organization and one more amenable to diagrammatic representation. All plants are assigned to one trust, all trusts to one industry, and all industries have their place in the national plan. But under the capitalist system (if it can be called a 'system') where the attitude to the entrepreneur is one of *laissez faire*, a number of complications are likely to mar the neatness of such a diagram as Table I. For instance, there is a certain amount of over-lapping. The General Electric Company, which is primarily making electrical apparatus, is seen to own some general engineering works for making certain subsidiary parts of their machines, and thus to touch on the iron foundry, engineering and ship-building industry. Under one firm several different industries may be represented, and the firm may branch out in all sorts of ways. There is no limit to what a firm may not produce. British railways do not confine themselves to the railway industry. They run hotels; they run ships; they also run engineering and woodworking plants for making their engines and carriages. The ordinary iron and steel firm does not confine itself to making iron and steel. It owns coal mines and thus 'poaches' on the mining industry. And finally, take that enormous organization, the Co-operative Wholesale Society. It is not merely a selling organization, retail and wholesale, but it also manufactures boots, clothing and food products, and many other goods. The firm is not limited to certain definite sorts of transaction, so that a complicated jig-saw puzzle results in which each firm is trying to form and re-form the area of transactions under its régime.

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It reminds one of nothing so much as the shuffling and re-shuffling of independent principalities of Central Europe during the Middle Ages; and those who have tackled the history of the Holy Roman Empire (which, as Lord Bryce said, was neither holy nor Roman nor an Empire) between 1200 and 1500 will have a clear understanding of the way in which different firms are trying to carve out bits of the industrial field, and of the complications that arise.

The definition of any one industry is thus very blurred. We talk of such-and-such industry and such-and-such another industry, but in actual fact the boundaries between the two are extremely uncertain and we can only trace with difficulty the logic of events.

§ 2. *The Efficiency of Large-scale Operation*

Now that the structure of industry with its firms and plants has been analysed and the various possible references of the 'scale of production' made more definite, we may advance to enunciate a bold proposition. There are logical reasons for supposing that, granting the advantages of mechanical and human specialization, *large-scale production, especially when conducted in large-scale firms and plants,* results in maximum efficiency. We shall use the expression 'large-scale operation' to refer to the large-scale production of any article or service *when conducted within one organization.*¹ This proposition

¹ It should be noted that large-scale operation implies some degree of large-scale organization, but no more than is necessary for the one article concerned to be made in quantity. Readers who feel confused by the distinction between operation and production may substitute in their minds mass-production for large-scale operation. The phrase mass-production is not generally used in the text because it has lately aroused too much enthusiasm and too much prejudice to be free from emotional bias.

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may therefore be referred to, for short, as a belief in the efficiency of large-scale production and especially a belief in the *efficiency of large-scale operation*, i.e. large-scale production within one organization.

Belief in large-scale production whether or not conducted within one plant or firm is equivalent to a belief in the truth of the economists' law of increasing return (or, as it is alternately called, decreasing cost), that runs to the effect that the more the amount of any commodity (goods or service) provided, the greater the return or the less the cost. The two alternative phrasings may indeed be combined this way: "the more the amount of any commodity that is provided the greater the efficiency." For by *efficiency* I refer to a relation between return (or productivity) and cost. Efficiency is indicated by the amount of return (or product) obtained at any given cost, the precise relation being either a ratio (where efficiency is greater or less according as return divided by cost is greater or less) or a difference or 'margin' (where efficiency is greater or less according as return *minus* cost is greater or less). To be efficient thus means that either the average return or the differential or marginal return is high. It should here be noted that the conception of economy or 'elimination of waste' (as modern rationalizers put it) is simply the reverse method of saying efficiency.¹

Efficiency takes cost as given and focuses attention upon return or product; economy or elimination of waste takes return or product as given and focuses attention upon the cost incurred. To be economical or to eliminate waste implies that either average cost or differential, marginal cost is lowered. The standpoint of both efficiency and economy may be

¹ See Florence, *Economics of Fatigue and Unrest*, p. 24.

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combined by defining a *rational organization of industry* as one that *yields maximum return or product at minimum cost*.

Both the return and the cost elements in efficiency or economy can appear on any one of the three levels with which economics is concerned; the monetary, the physical and the psychological. In monetary terms efficiency is marked by the provision of maximum exchange value of goods or services at minimum expense in materials and other factors of production. It is on this level that efficiency measured as return *minus* cost, is indicated by business profits. In physical terms, efficiency is marked by the provision of a maximum volume of goods and services of given quality at a minimum use of materials, equipment and workers' time. The law of increasing return or decreasing cost is usually first enunciated by economists in these physical terms.¹ In psychological or human terms, efficiency is marked by the provision of maximum utility and satisfaction at minimum 'real' cost in effort and sacrifice.

With these necessary explanations in mind we can now proceed with the bold proposition. First of all we may deal with its 'especial' belief in the efficiency of large-scale production *when conducted within one organization*, i.e. the belief in large-scale operation.

Belief in the superior efficiency, under modern industrial conditions, of organized as against unorganized large-scale production—or (in the terms used by economists) belief in the superiority of internal as against external economies depends partly on (a) the superior efficiency of a large plant, partly on

¹ Marshall, *Principles of Economics*, IV, xiii, § 2.

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(b) the superior efficiency of a large firm controlling several plants, as against several plants or several firms making the same aggregate quantity of the same sort of article.

(a) Specialization of men and machinery necessitates their congregation or coincidence at one time and place, and though *localization* of separate organizations in one district may effect an approach to such co-incidence, three logical reasons for the large plant seem *prima facie* obvious.

✓ (1) Transport and routing costs in moving goods from one process to another or from process to stores or stores to process will be less if the process or stores are in the same plant rather than in neighbouring plants. As Babbage put it, writing in 1832,¹ "the material out of which the manufactured article is produced, must, in the several stages of its progress, be conveyed from one operator to the next in succession: this can be done at least expense when they are all working in the same establishment. If the material is heavy, this reason acts with additional force."

✓ (2) Auxiliary services such as repairs and maintenance, or toolmaking, are more readily communicated with and brought to the spot if the services are part of the productive organization instead of being called in from outside.

✓ (3) Communication of plans and orders is more readily effected and their execution supervised within one plant than among several plants.

In short, the modern specialization of factors of production has increased the need for co-ordination, co-ordination is furthered by local coincidence and congregation, and a single plant is more localized than any localization of separate plants² can possibly be.

¹ *Economy of Manufactures*, Chap. XXI.

² This argument is developed in my *Statistical Method in Economics and Political Science*, p. 332. Where materials as in the iron and steel industry can be transported in liquid and

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(b) The superior efficiency with which large-scale production can be performed if included under the rule of one firm even though physically scattered in several plants largely centres round the acquisition and dissemination of knowledge. Knowledge is available throughout the organization of any patents, secret devices, results of technical or market research (e.g. customers' financial position). This knowledge can be disseminated effectively even though the subsidiary plants must for technical reasons be in different places, as for instance a chain of shops selling the same sort of articles, or factories making a heavy and unwieldy article (e.g. beer and agricultural machinery).

In fact, it is often impossible to obtain a large-scale production of one and the same article without large-scale organization. Unless accurate grading is resorted to throughout an industry different firms will in practice be making different varieties. Just as there is no localization so complete as localization within one plant, so there is no standardization and mass-production so complete as the *particular* standardization (to use Marshall's phrase) within one firm.

The special case just argued supports belief in the greater importance of the internal as compared with the external economies of large-scale production. But we now proceed to the logical reasons for supposing any economies at all to result from large-scale production whether carried on in one or several

molten form from one process to another, or where several consecutive processes can be performed by a single machine (see Robinson, *Structure of Competitive Industry*, p. 25), there is a further argument for the superior efficiency of the larger plant that includes several processes over smaller plants performing only one process.

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organizations. This belief in the economists' law of increasing returns can be based, in my view, on three definite principles of efficiency: the principle of bulk-transactions, the principle of massed reserves, and the principle of multiples. All three principles assume an economic advantage in specialization of men and equipment and look to long-run conditions in the course of which adjustment and reorganization of factors of production is feasible.

THE PRINCIPLE OF BULK TRANSACTIONS is the simplest to understand. It is illustrated by the fact that the total monetary, physical or psychological costs of dealing in large quantities is sometimes no greater (and in any case less than proportionately greater) than those of dealing in small quantities; and hence the cost *per unit* becomes smaller with large quantities. A salesman, or purchasing agent, may spend no more effort in negotiating a £1,000 order for a given article or a clerk in booking and filing it, than in the case of a 10½*d.* order. Similarly a large order for a single article going through the factory causes no more cost in the alteration and re-setting of machines than a small order, and a long railway train costs no more in signalling and driving than a short one.

This principle is not confined to dealings and services. It also holds of physical properties. A large container will hold more goods per given cost than a small container, owing to the fact that cubic contents or volume increases more than proportionately to area of containing walls. Hence bulk transactions permitting the use of larger railway trucks, ships or boilers tend to be more economical and efficient than transactions on a smaller scale.¹

¹ Kimball, *Economics of Industry*, p. 165; Robinson, *Structure of Competitive Industry*, pp. 29-30.

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THE PRINCIPLE OF MASSED RESERVES. This principle has come to the fore in many apparently unrelated branches of economic life. It appears in schemes for the decasualization of labour at the docks and underlies all forms of insurance and banking; the reserves that are economized may in fact be labour, liquid monetary resources, stocks of goods and materials or any other factors in production, when the demand upon these factors are somewhat uncertain in their incidence.

To take a generalized case. Suppose that there are ten varieties of one type of article for each of which the normal demand is 100 units subject however to a deviation either way of 20 per cent. Each variety must then be stocked to supply a possible demand of 120 units, leaving a normal reserve of 20 units. The total of these normal demands will be 1,000 units and the total of the separate reserves for each variety will be 200 units. But it is improbable that all the varieties will be demanded to the maximum or minimum extent at one and the same time. In times of brisk trade five of the varieties may be enjoying the maximum demand of 120 units while the other five, if not suffering the minimum demand of 80 units, may only be demanded to a 'normal plus' extent of 110 units. Unused reserves will then be 5×10 units.

Now suppose that, fluctuations in trade remaining the same, *one* variety is manufactured on a large-scale for the *normal* demand of a 1,000 units rather than ten varieties of the same type each on small scale for a 100 units normal demand. In times of *brisk* trade the same total demand as above, namely $(5 \times 120) + (5 \times 110) = 1,150$ units, no longer involves 20 per cent above normal production but only 15 per cent. Thus under similar conditions larger-

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scale production involves keeping a 15 per cent reserve as against the 20 per cent reserves of the several smaller-scale productions.

This imaginary case of course is merely a rough illustration of the statistical theory of probable error that the greater the number of items involved the more likely are deviations in their amounts to cancel out and to leave the actual result nearer to the expected result. The probable deviation in orders for similar items that a reserve guards against is thus proportionately less when orders are many, and the cost of reserves per unit of output falls correspondingly.

THE PRINCIPLE OF MULTIPLES. This principle was probably first enunciated by Babbage in 1832.

“When (from the peculiar nature of the produce of each manufactory) the number of processes into which it is most advantageous to divide it is ascertained, as well as the number of individuals to be employed, then all other manufactories which do not employ a direct multiple of this number, will produce the article at a greater cost.”¹ Or, in my own words, “the smaller the scale of operation and the fewer the total number of persons dividing and diffusing their labour, the less chance there is of all of them being fully made use of as specialists”.² We need not enter into the superior efficiency and economy of specialization; that has been dealt with by a long line of economists from Adam Smith to the present day. This efficiency is only potential and depends for its actuality upon the full use of the specialists. An expert or a one-purpose machine idle most of the time is not efficient, nor would it be

¹ *Economy of Manufactures*, Chap. XXI.

² *The Statistical Method in Economics and Political Science*, p. 450.

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efficient to transfer that specialized machine or person to varieties of work for which it or he were not specialized. Specialization involves expensive training and expensive fittings which would be wasted if used where that training and those fittings were unsuitable. But the capacity of different specialists and special machines is very different, and involves a difficult problem in 'balancing' production. Suppose that an article is being manufactured by subjection to three consecutive processes, the first a hand-process where a specialist can make 30 units a week, the second an automatic machine process where 1,000 units can be made in a week, the third a semi-automatic machine process where 400 units can be made per week. Then to employ all the specialists and special machines fully a number of units must be made per week that is a multiple of 30, 400 and 1,000; otherwise some man or machine will be partly idle. In this case the lowest common multiple number of units that will employ specialists in all processes to full capacity is 6,000—permitting six automatic machines, fifteen semi-automatic and two hundred specialists to be fully employed. Clearly this assumes large-scale production; and if, as is likely on the argument presented above (pp. 13-15), all the processes involved are operated by one organization it assumes a large-scale firm or plant. The greater the productive capacity of any one factor (e.g. the large container) the greater will be the necessary multiple. Hence the principle of bulk transactions enhances the importance of the principle of multiples.

Any given specialization of equipment or men involves for balanced production a large scale of operation or production; but conversely it is only a large scale of operation or production that admits

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of specialization with all its well-known economic advantages. It is only large-scale production that will justify a special research department, intensive costing, or the working up of by-products able to occupy researchers, cost accountants or by-product plant profitably for their full time. Thus a *virtuous circle* is established. Specialization leads to higher common multiples, higher common multiples to greater specialization.

An interesting economy illustrating the mutual reaction of specialization and large-scale production through the principle of multiples combined with the principle of bulk transactions, occurs in the employment of 'big brains'. Like the case of the large container one double capacity brain is more efficient than two single capacity brains since the two separate brains have probably to be co-ordinated by yet a third person. But a double capacity brain, to yield its full efficiency, must specialize and concentrate on thinking out the problems of one line of production—that line of production will have to be bulked very considerably to reduce the payment for the big brains to a reasonable cost per unit; and this bulking to secure economies in what is only one factor will involve a huge organization when a multiple of the work of that factor and all other factors has to be obtained.

§ 3. *The Degree of Efficient Integration* ✓

The three principles that have been briefly indicated support the contention that large-scale production (preferably by larger-scale organization) is more efficient or economical than smaller-scale. It remains to show why larger-scale *organization* may also be more efficient even though there is no larger-

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scale production of any one particular article, but merely production of more sorts of articles each more or less on the same scale.

The production of many different sorts of articles is sometimes referred to as horizontal integration ; but to avoid confusion with the mere addition to the scale of production of the same article (to which horizontal integration may also refer) we shall follow Mr. Dennis Robertson in the use of the expression lateral integration.¹ The lateral relation may subsist between products *diverging from* the same process or source, or between materials *converging* upon the same process or market. In either case the clue to the economy of producing together articles laterally related is that they have common overhead costs.² Articles *diverging* from the same process have materials in common (and possibly the earlier processes) and the economy of bulking applies therefore when one organization buys common materials. Articles *converging* upon the same market have marketing costs in common (and possibly the later manufacturing processes) and the bulking of orders from customers is economical in the time of clerks and sales force even though the order is composite and consists of a demand for several different products.

Thus *as far as their common costs* are concerned the principle of bulking may be extended from the production of a single article to that of laterally related articles provided by one organization.

The same corollary holds true of the principle of multiples. If a given special process cannot be

¹ *Control of Industry*, Chap. III, § 2.

² In business terminology 'overheads' refer more particularly to such common costs than they do to fixed or supplementary costs.

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used to capacity in one line of production it may be worth adopting a second or third line that would also diverge from this process to fill the gap. And in the case of convergent articles, it may be economical to use a selling force to capacity by adopting subsidiary articles that they can sell, so to speak, in their spare time.

When it comes to the principle of massed reserves a new force is added, as far as economy in financial 'liquid' reserves is concerned, when organizations enlarge even though the larger scale is obtained by engaging in *several* lines of transactions of given scale rather than enlarging one line. For risks may then be spread or even dovetailed. Larger firms may be formed by integrating laterally along *divergent* lines for the logical reason that if demand fails or falls for one line, compensation may be found in increased demand for other lines. And larger firms may be formed by *convergent* integration to avoid the risk of failure or rising cost of one line of supply.

Hitherto we have shown how the three principles are applicable at least *in some degree* to lateral integration where the integrated articles have common costs and different risks. But there are two other forms of integration to be considered, so-called vertical, and what I shall venture to call diagonal integration. *Vertical* integration consists in the performance by one organization of consecutive processes upon any one commodity, for instance, carding, spinning and weaving in the textile industry. *Diagonal* integration consists in the provision inside any one organization of auxiliary goods or services required for the various main processes or lines of production of that organization. An organization may, for instance, provide its own designs or power,

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make its own tools and machines, or use its own carpenters' services for repairs.¹ Some degree of vertical or diagonal integration is almost invariably present in modern industrial organizations. Indeed, the principle of multiples implies a minimum degree of vertical and diagonal integration, since it is a question of finding a multiple of the output of more than one process, or service.

But the precise degree of integration is not invariable. Some textile firms spin *and* weave, others merely spin, *or* merely weave. Again some firms provide their own electrical power, others buy it from power companies; some provide their own designs, others buy them from outside; some make their own machines and tools, others buy them ready-made; some employ their own force of carpenters, others call them in from outside contractors. An explanation is thus required for the frequent practice of *extending* operations vertically or diagonally even though this does not directly appear to increase the scale of operation in any one material product, process or service.

The logic underlying some degree of diagonal, or 'services', integration has already been indicated in arguing for the efficiency of large-scale organization (pp. 13-15). It is economical of transport, communication, and supervision of execution if consecutive processes and services are all coincident within one large plant; and economical of knowledge if that can permeate throughout a large firm. In short a

¹ This integration is diagonal since the auxiliary goods or services help a number of lines or successive processes and can only be pictured as slanting into the main structure at various angles. It might perhaps be more intelligible, if instead of convergent, divergent, vertical and diagonal integration were used 'materials', 'products', 'processes' and 'services' integration.

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certain balance must be struck between the efficiency of specialization on a large scale upon one sort of material and product and one sort of process or service, and the efficiency of integrating several materials, products, processes or services.

The argument in logical justification of integration pursued in the last few pages does not however override the primary economy of large-scale *operation*. If an organization sacrifices the economies obtainable by concentrating on a single variety or process of production and integrates laterally or vertically it can only be justified economically by some sort of special pleading on the lines of common overhead cost and/or consolidation of risk.

In the assumption made above (p. 16) of the economic advantage in specialization of men and equipment, and of long-run conditions when factors of production can be adjusted and reorganized, there is in my view no theoretical limit to the increase in the *physical* return obtainable by larger-scale operation. But this is a very bold assumption as the following chapters will disclose.

CHAPTER II

THE ILLOGIC OF ACTUAL OPERATION

§ I. *Actual Scales of Production and Operation*

WE now turn from the theoretical logic of industrial organization to look at the facts. Logic points to organization upon lines of large-scale production of one or a few varieties of articles within a few large-scale firms and plants; but the facts of the modern world appear to point the other way.

First of all there is a myriad variety in the articles provided. Instead of large-scale production of a few commodities there is everywhere small scale production of a multitude of sizes, shapes and qualities of the same sort of article. Some numerical idea of this orgy of specifications may be obtained by a glance at the work of the simplification movement in the United States. Even in that supposed country of standardization it took all the energy of Mr. Hoover, when Secretary of the Department of Commerce, to get the following results between 1921 and 1925. Among producer's goods the number of sizes or varieties of shovels, spades and scoops were reduced from 4,460 to 384, of grocer's paper bags from 6,280 to 4,700, of grinding wheels from 715,200 to 255,800, of warehouse documentary forms from 'thousands' to fifteen. Among consumer's goods the number of sizes and varieties of hotel chinaware was reduced from 700 to 160, of brass lavatory and

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sink traps from 1,114 to 72; and of milk bottles alone from 49 to 9.

Even though 'an industry' produced a great variety of patterns it might yet be true that the firms or plants within the industry each produced one or a few of the varieties, obtaining by such specialization large-scale *operation*. But this usually is not the case. Each firm or plant tries to supply the whole gamut of varieties, and thus by competing all along the line with all the other firms or plants in the industry only succeeds in conducting small-scale operations.

The varieties of product made by firms employing no more than a few hundred workers may run into thousands or tens of thousands, as the perusal of any of their catalogues may show. It can be demonstrated mathematically that even if only one small article is produced—say an electrical switch for domestic lighting—but produced in half a dozen materials, a dozen colours, a dozen sizes and two dozen shapes, some 20,000 varieties of the product will be made.¹ What possibilities of further multiplication in the products of one firm are offered when numerous kinds of articles—pots, pans, kettles, pails, skillets, griddles, mugs, dishes, tins, buckets, scuttles, cans, dutch-ovens, percolators, roasters, steamers, urns, bins—of all forms, sizes, shapes and colours are produced at one and the same time.

The English metal industries are full of instances such as this. One firm "makes locomotives of 24 different gauges between 18 in. and 5 ft. 6 in., and sizes may vary from 6 to 60 tons throughout the range . . . consulting engineers acting for buyers may insist on variations in details to suit their own

$$^1 6 \times 12 \times 12 \times 24 = 20,736.$$

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views." ¹ The Board of Trade Engineering Trades Committee of 1916-17 was

"much impressed . . . by the very large number of relatively small firms that exist—each with a separate organization, separate establishment charges, separate buying and selling arrangements, and each producing a multiplicity of articles. Some of them seemed to take a special pride in the number of things they turned out. . . . The result of many firms being employed upon producing a large number of articles in common use is the causing of confusion in the types of articles produced, so that no two manufacturers seem intentionally to produce the same article. Each one claims some special merit of his own." ²

Yet many experiments that firms have made for themselves in reducing their lines have shown surprising economies.

There are but a handful of published instances, all American at that, but these are typical enough of the variety programme presented by English firms in many industries, to deserve quotation.

A printing company employing 500 men originally undertook printing and lithography of all kinds; telephone books, business cards, office forms, printed labels for package goods, school books, advertising displays, calendars, forms, etc. Its salesmen were allowed to take orders for anything a customer might want. In this instance ³ the firm decided to specialize on one or two 'lines,' namely coloured labels and lithographing of calendars only and to produce these on a large scale. The result was greatly increased profit.

¹ "Balfour" Committee on Industry and Trade.—*Survey of Metal Industries*, p. 172.

² *op. cit.*, p. 146.

³ *Bulletin of the International Management Institute*, October, 1930.

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Another recorded instance is of an American company originally making 3,500 types and variations of circular saws and an even larger variety of hand-saws.¹ This company simply followed the usual trade practice of producing whatever varieties their customers specified. The specification itself usually originated with the saw-filer employed in the customer firm and was simply the result of "personal prejudice, custom, past performance and so forth. Frequently a saw-filer's demands changed somewhat from time to time without the filer's being aware of the fact." The costs of this system (or lack of system) due to the high proportion of work not done according to specification and to loss of production control were so great that the company's 'research-man' at last proposed to reduce circular saw varieties to 200 only, a number he believed quite adequate to supply the actual needs of all users of circular saws.

One last instance may be quoted in the Jantzen Knitting Mills.² Originally these mills turned out sweaters, coats, caps, stockings and many other varieties of 'knit wear'. Gradually, however, various products were eliminated "with highly satisfactory results" and in 1926 it was decided to concentrate entirely upon swimming suits of only one quality, and to make these upon a large scale.

"Coupled with this great increase in business volume (of swimming suits) had been a phenomenal decrease in production costs. Garment production per operator had risen steadily. Prior to the simplification program, an operator sewing a special seam turned out 9 seams per hour. Under simplification, by means of special machines

¹ Robbins and Folts, *Industrial Management*, A Case Book, p. 62.

² *op. cit.*, p. 58.

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and specialization on this one operation, she produced with no greater effort 45 of these seams per hour. . . . Supervision was made simpler, with the result that foremen and superintendents found time for more work of a constructive nature."

§ 2. *The Actual Size of Manufacturing Plants*

A summary of the American Census of manufactures of 1909, given in Table II, shows very clearly the enormous variety that exists in the size of plants (or of 'establishments' as they are officially called) within each of the more important¹ manufacturing industries. The table gives the percentage of all wage-earners engaged in any one industry that are employed in plants employing eight specified ranges of numbers, 1 to 5, 6 to 20, 21 to 50, and so on up to over 1,000. The table thus enables us to say what proportion of employees work in minute (1-5), very small (6-20), small (21-50), smallish (51-100), medium (101-250), largish (251-500), large (501-1,000), and very large plants employing over 1,000 wage-earners. It is important to realize that

¹ The fourteen industries shown in the table are the manufacturing industries that were most important *in England* in 1924, and they are presented in the order of their importance as measured by the *value of their net output*. Clothing would come third if we added men and women's clothing, not separately distinguished in the English census, and printing would come fourth if we added printing and newspaper publishing to the more important division, separately distinguished in the English census, of printing and bookbinding. Foundry is roughly equivalent to engineering, and malt liquor will be familiar to English readers as brewing. The year 1909 has been chosen since the next detailed census occurred in 1919 when organization for war rendered the distribution of resources abnormal. Results of the detailed census for 1929 have not yet (July 1933) been published.

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TABLE II SIZES OF PLANTS

Percentage of all Wage-Earners employed in Establishments employing specified Number. U.S.A. Census of Manufactures, 1909

Number of Wage-earners	1-5	6-20	21-50	51-100	101-250	251-500	501-1,000	over 1,000
ALL MANUFACTURES . . .	4.7	9.7	11.6	11.8	19.0	15.2	12.7	15.3
PARTICULAR INDUSTRIES :								
Foundry * . . .	2.4	7.9	11.6	13.6	22.5	15.8	12.7	13.4
Cotton . . .	—	0.3	1.7	4.3	15.6	20.3	23.4	34.3
Printing † . . .	15.8	26.5	17.2	13.5	16.2	8.2	6.7	1.9
Wool . . .	0.2	0.8	3.2	8.6	23.5	16.5	14.1	33.1
Malt Liquor ‡ . . .	1.4	11.5	23.4	21.8	17.2	10.4	7.2	7.2
Automobiles . . .	0.8	2.8	5.5	7.0	16.4	14.9	19.9	32.6
Iron and steel . . .	—	0.1	0.5	1.9	6.2	14.6	23.8	52.9
Car and Railway Works. . .	0.1	0.8	1.8	4.2	13.2	22.6	30.6	27.4
Bakery. . .	26.5	23.4	9.7	8.2	11.2	6.7	2.6	1.6
Electric M/C.. . .	1.0	3.5	5.6	7.4	16.3	11.1	7.0	48.0
Gas. . .	4.1	8.8	9.5	13.0	19.1	11.9	11.3	22.3
Boot and Shoe . . .	0.6	2.5	5.1	8.7	21.2	28.0	21.8	12.1
Clothing :								
Women's . . .	1.6	13.9	26.8	21.9	23.7	9.4	1.9	0.7
Men's . . .	1.6	12.2	20.2	15.5	16.8	12.7	11.0	9.8

* General engineering.

† Including newspaper publication and bookbinding.

‡ Brewing.

the items that are distributed are not the individual plants but the wage-earners employed. Clearly if a typical size of plant is to be discovered in any industry what is wanted as a measure is the size from which a certain bulk of the output of that industry comes. A majority of plants might be, and in most industries in fact are, of small size, but their very smallness means that their aggregate output is small and of little importance in the output of the whole industry.

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Physical output cannot be tabulated as a common measure, but statistics of men employed are available for use as a rough index of size of output per plant. Hence, to find what sizes of plant provide the bulk of output we may enquire in what consecutive sizes the bulk, say 50 per cent of wage-earners, are employed.

On the first view it will be noticed that there are no percentage figures in this table, with two exceptions, that rise over 40 per cent; in other words, there is not one of these size-classes of plant that contains more than 40 per cent of all the workers. There are only two industries—iron and steel and electric machinery—of which one can say, "In that industry 40 per cent of the workers work in plants of that size-class, and that is therefore a representative size." In most industries it is impossible to say at first glance that there is any single size of plant that is representative, even when only the very broad classes of size given in the table are considered.

It is apparently impossible, then, to speak of any definite typical size of plant in any industry. There are all sorts of sizes. But this negative statement may be qualified. Some sizes are obviously more populous or frequented; they are represented by higher figures than other sizes. And we can ask within what range of sizes the majority of all wage-earners are employed. The range within which over 50 per cent are employed can be found very easily in the table by adding up percentage figures that appear next to one another. It can be said definitely that in the foundry industry there are over 50 per cent of the workers concentrated in the three contiguous classes employing 51 to 500 workers. In the cotton industry, since 23·4 per cent of workers are in plants employing 501-1,000 and 34·3 per cent

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in plants employing over 1,000, there is a concentration of over 50 per cent in plants of the two sizes. Since two sets of three size-classes may be added to obtain 50 per cent of the workers, we may say that in the wool industry there is a bimodal concentration, that it is an industry in which there are two typical *ranges* of size. In malt liquor there is a concentration of $23.4 + 21.8 + 17.2 = 62.4$ per cent of workers in plants employing from 21 to 250 workers; in automobiles the concentration is in much bigger works—those employing from 501 upwards. In iron and steel there is an instance of high concentration in one class—52 per cent of the workers are in works employing over 1,000; in the car and railway works industry 57.4 per cent of the workers are in works employing over 500; in bakery, a very large industry which includes bread and biscuit-making, over 50 per cent of the workers are in very small plants employing less than 20. Printing is another large industry where, however, 53.5 per cent of the workers are concentrated in small plants employing from 1 to 50; opposed to that is electrical machine-making and engineering where the concentration of over 50 per cent of all wage-earners comes in plants that are very large, employing over 500. In the gas industry there are no contiguous classes that contain 50 per cent of the workers. In the boot and shoe industry the typical plant can be said to be medium size—there is a very marked concentration of 71 per cent, in plants employing 101 to 1,000. Finally, in the clothing industries, the medium-sized plant also appears typical. In the women's clothing industry 72.4 per cent of all wage-earners and in the men's industry 52.5 per cent are engaged in plants employing from 21 to 250 wage-earners.

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To sum up the American evidence, the *larger-plant* manufacturing industries appear to be iron and steel, cotton, railway works, automobiles and electrical engineering; *largish-plant* industries, foundry and machine products; *medium-plant* industries, brewing, boot and shoe, and clothing (women's and men's); *small-plant* industries, printing and baking.

In Germany sizes of manufacturing plants or establishments have been measured officially on somewhat similar lines to the American plan, though the six-fold grouping of sizes does not use the same class-limits as the American eight-fold division, and the industries are not defined in the same way. Space forbids the tabulation of the detailed statistics, but if the same methods of finding representative sizes are adopted as I have suggested in the case of America, it appears that in 1925 the large-plant industries were machinery, vehicles and ships, electrical engineering, chemicals, and production of iron; the medium-plant industries were paper and printing, and textiles (mainly cotton and wool); while small-plant industries included clothing, where 65 per cent of wage-earners were employed in plants employing less than 50 persons.

In England the censuses of production made no report on sizes of plant or firms till 1924, when it was found possible to state the number of operatives and the approximate number of 'returns'¹ in cer-

¹ *Final Report*, Table XIII, p. 461. Unfortunately, as the following official explanation shows, it is not possible to say whether return refers to plant or firm.

"Firms that owned several establishments in which the same trade was carried on, and desired to make combined returns covering all these establishments, were generally permitted to do so; in many such cases, the owners preferred to make a separate return for each of their establishments. On the other hand, many large enterprises engaged in several distinct trades

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tain *groups* of industries. From this somewhat unsatisfactory method of presentation it appears that in 1924 the large-return groups of manufacturing industries, with many operatives per return, included iron and steel (including engineering), textiles, and public utility; the medium-return included chemicals; the small-return industries (with an average of *less than 65* operatives per return) included paper and printing, clothing, and the food, drink and tobacco industries.

The evidence from the three leading manufacturing countries of the world agrees in certain facts that run contrary to our theory of the logic of large-scale organizations.

(1) Except in one or two industries such as iron and steel there is no marked predominance of large plants and in most industries there is a wide scatter of sizes.

(2) In many industries, notably baking, printing, and clothing, there is a distinct predominance of the small plant employing less than fifty or sixty workers.

That the logic of large-scale plants is not entirely theoretical, however, is shown by the actual figures of growth in the average size of plants comparing one period with another.

In America this growth in size can be concisely measured by showing for manufacturing industries as a whole (Table III) the percentages of all wage-earners employed in establishment of the ranges of size already distinguished in Table I for the year 1909. Clearly the proportion of wage-earners em-

were asked to furnish separate returns for each of those trades and in these cases a single industrial undertaking was responsible for several returns."

Only those returns were tabulated that covered more than ten persons on the average.

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ployed in the smaller-scale plants is gradually diminishing, those employed in the larger-scale plants on the whole gradually increasing. The same tendency is true of Germany where between 1882 and 1907 the number employed in the larger establishments (employing over 50 workers) increased by 225 per cent, while those employed in the smallest establishment (employing less than 5) increased by only 38 per cent.

TABLE III

GROWTH IN SIZE OF PLANTS

Percentage of all Wage-earners employed in Establishments employing specified Number. U.S.A. Censuses of Manufacture

Number of Wage-earners	1-5	6-20	21-50	51-100	101-250	251-500	501-1,000	over 1,000
1909 . . .	4.7	9.7	11.6	11.8	19.0	15.2	12.7	15.3
1914 . . .	4.5	8.6	10.6	11.3	18.8	15.3	13.2	17.8
1919 . . .	3.4	6.9	9.1	9.8	17.4	13.8	13.3	26.4
1923 . . .	2.5	6.9	9.3	10.0	17.9	15.1	14.1	24.2

§ 3. Actual Sizes of Manufacturing Firms

If attention is turned from the plant to the firm, the same general scatter and frequent predominance of small sizes also appears to exist. General statistics are here sadly lacking, but sizes of firms show the same sort of distribution as plants in *individual* industries that have been investigated separately, such as the English cotton and woollen industries and motor-car¹ manufacturing. In the United States a general investigation into the number of

¹ Reports of the 'Balfour' Committee on Industry and Trade.

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plants controlled as a group from one central office showed¹ that the sizes of groups had no typical average. The most frequent case was two plants per group—and the number of cases of larger groups tapered down gradually in their frequency. The most surprising result of this investigation however was the infrequency of any such grouping at all. The great majority of plants were apparently also complete firms. This preponderance of firms of only one plant was true of all groups of manufacturing industries except railroad repair shops, but the preponderance was least in chemicals and allied products and textiles and their products. This apparent scarcity of organizations with several plants is probably due to a narrow definition. Central office organization is not synonymous with our conception of the firm, for we would include a whole combine as *one* firm, even though several central offices were included in the combination.

On the whole it appears that in manufacturing, firms are large in those industries where plants are large, and small in those industries where plants are small, though this positive correlation is by no means true, as will be seen of non-manufacturing industries such as retailing or banking. It appears further that the small manufacturing plant tends to be the one and only plant controlled by a firm, while the larger plant tends to be combined with the large plants. From this it follows that the sizes of firms are even more various than that of plants and any one typical size still more difficult to find in practice than in the case of firms. Yet in partial confirmation of the logic of large-scale organization the tendency toward combination of plants has on the

¹ *The Integration of Industrial Operation*, U.S. Census Monograph, 1924.

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tedly increased in momentum and the growth in size is probably more marked than plants. That large manufacturing provide economies in management and the conclusion of an unfortunately isolated statistical investigation into American wholesale bakeries.¹ While the manufacturing, selling and delivery expense was lowest per unit in middle-size bakery firms each with an output of 15 to 30 million pounds weight per annum, the general and administrative expense including purchase of raw materials was lowest per unit in large-size bakeries controlling several plants and each turning out over 35 million pounds.

§ 4. *Actual Sizes of Plants and Firms in Non-Manufacturing Industries*

If the enquiry into the actual existing scale of manufacturing industry be extended to other producing industries and to the distributive and service industries, the prevalence of small organizations (plants and firms) will become still more evident. In agriculture the average farm may employ some half-dozen hands as in many parts of England, or may be run almost entirely by a single family as in the system of peasant proprietorship, and there is little or no combination of farms into larger agricultural firms. In house-building the small contractor is the rule. In the banking division of commerce the rule, in European countries at least, is for a few large banking firms to own a very great number of small branches. In retailing, though the large-firm small-plant arrangement is found in the big chain-store

¹ Federal Trade Commission, quoted in *Recent Economic Changes*, Vol. I, p. 189.

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plants controlled as a group from one central office showed¹ that the sizes of groups had no typical average. The most frequent case was two plants per group—and the number of cases of larger groups tapered down gradually in their frequency. The most surprising result of this investigation however was the infrequency of any such grouping at all. The great majority of plants were apparently also complete firms. This preponderance of firms of only one plant was true of all groups of manufacturing industries except railroad repair shops, but the preponderance was least in chemicals and allied products and textiles and their products. This apparent scarcity of organizations with several plants is probably due to a narrow definition. Central office organization is not synonymous with our conception of the firm, for we would include a whole combine as *one* firm, even though several central offices were included in the combination.

On the whole it appears that in manufacturing, firms are large in those industries where plants are large, and small in those industries where plants are small, though this positive correlation is by no means true, as will be seen of non-manufacturing industries such as retailing or banking. It appears further that the small manufacturing plant tends to be the one and only plant controlled by a firm, while the larger plant tends to be combined with the large plants. From this it follows that the sizes of firms are even more various than that of plants and any one typical size still more difficult to find in practice than in the case of firms. Yet in partial confirmation of the logic of large-scale organization the tendency toward combination of plants has on the

¹ *The Integration of Industrial Operation*, U.S. Census Monograph, 1924.

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whole undoubtedly increased in momentum and the tendency to growth in size is probably more marked among firms than plants. That large manufacturing firms provide economies in management and marketing is the conclusion of an unfortunately somewhat isolated statistical investigation into American wholesale bakeries.¹ While the manufacturing, selling and delivery expense was lowest per unit in middle-size bakery firms each with an output of 15 to 30 million pounds weight per annum, the general and administrative expense including purchase of raw materials was lowest per unit in large-size bakeries controlling several plants and each turning out over 35 million pounds.

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firms, small independent retail shops are the most usual and the big department store very much the exception. This is clearly shown in Table IV,¹ quoted from Braithwaite and Dobbs².

TABLE IV
NUMBER AND AGGREGATE TURNOVER OF RETAIL SHOPS IN GREAT BRITAIN, 1930

Type of Shop.	No. of Shops or Branches.	Annual Aggregate Turnover.	Annual Average Turnover per Shop or Branch.
Unit Shops . .	500,000–600,000	£1,000,000,000	under £2,000
Chain Stores . .	30,000	£300,000,000	£10,000
Co-operative Societies	10,000	£200,000,000	£20,000
Department Stores	1,000	£150,000,000	£150,000

As these authors remark “The typical shopkeeper is still the independent tradesman, owning and managing a single shop, and working on a comparatively small scale. The number of shops conducted in this manner is well over 90 per cent of the total, and they account for something like two thirds of the entire turnover.” To illustrate the small scale of the average shop Braithwaite and Dobbs also give an estimate of the number of the population per shop in various cities. The number is 39·7 in Liverpool; 43·8 in Manchester; 51·7 in Birmingham; 54·3 in Belfast; 59·6 in Newcastle; 60·0 in Sheffield; and 113·9 in Bradford.

In my *Statistical Method*³ I attempted to obtain a

¹ Braithwaite and Dobbs, *The Distribution of Consumable Goods*, p. 263. ‘Chain stores’ include all multiple retailers with five or more branches whether operated by manufacturers or solely as retail undertakings.

² p. 445.

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rough statistical measure of the size of industrial and business *firms* in all types of industry, by calculating the proportion of the total occupied in various groups of occupation who were returned in the Census of Population as employers, including those working on their own account. The results were as follows :

I. Employers numbering about, or less than, 1 in 100 of the total occupied, i.e. size of firms more than 100 persons.

Railways.
Coal Mining.
Textile Manufacturing.

II. Employers numbering from 1 to 20 per 100 of the total occupied, i.e. size of firms 5 to 100 persons.

Building.
Paper and Printing Manufacturing.
Clothing Manufacturing.

III. Small Firms. Employers numbering more than 20 per 100, i.e. size of firm less than five persons.

Agriculture.
Commerce and Finance.
Professions, excluding Teachers.
Personal Service.

If we accept the literary characterization of these ranges adopted above (p. 29) in the case of plants it appears that minute, very small, small and smallish firms all employing less than 100 are still the rule outside manufacturing industries except in the case of railway transport and coal-mining. In countries where the railway system is nationalized there is only one firm for the whole industry and in other countries the private firms can usually be numbered on the fingers of the hand. In mining

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this condition of monopoly or oligopoly has not been reached. There were some 1,400 coal firms or undertakings in Great Britain in 1924 owning 2,481 mines ; but even here in 1923 over 98 per cent of the output was produced by 715 undertakings each employing over 100 persons ; over 93 per cent by 467 undertakings each employing over 500 persons, and over 84 per cent by 323 undertakings each employing over 1,000 persons.¹

Most experts agree that coal-mining firms would gain in efficiency by enlarging and there is some statistical evidence to show that the larger undertakings do in fact make larger profits or smaller losses² ; but it is not in mining or transport that the theory of the efficiency of large-scale operation is flouted so much as in commerce. Here we touch upon the criticisms popularly levelled against the middleman. The popular view appears to have permeated technical circles and the president of the Engineering Section of the British Association for 1932 is found referring to the middleman as " that curse of civilization ".³

" As things are at present, a small town of twenty thousand inhabitants may have as many as three hundred shops. None of them will have a really good stock to choose from. Two really good departmental stores would be of very much more service to the inhabitants. . . . At present we have hundreds of men and women standing behind counters while customers are making up their minds as to what kind of ribbon to buy or how many yards of stuff they will want. . . . As many as

¹ *Report of the Royal Commission on the Coal Industry (1925)*, p. 47.

² *op. cit.*, Chap. V.

³ Presidential address of Prof. Miles Walker to the Engineering Section, British Association for the Advancement of Science, 1932, *Proceedings*, p. 143.

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three dozen business vans at present visit a small street in the course of a single day. Three delivery vans in a day bringing everything for everybody should be quite sufficient."

This criticism of the middleman attacks the number of retailers at the final stage in direct contact with the public. Another point of attack is the number of stages that goods must pass through before ever they reach the public. Indeed the word middleman is often confined to the jobber, agent or wholesaler who is seen to stand between producer and retailer. In my view the number of such stages is a direct consequence of the small scale on which either production or retailing, or both, is organized. Somewhere in the process of production and distribution efficiency demands large-scale organization. If in any one line of goods there are a hundred small producers and a thousand small retailers there will, of mathematical necessity, be a hundred multiplied by a thousand contacts between them. Salesmen, orders, deliveries, invoices, bills, receipts will be thus multiplied a hundred thousandfold. But let three large wholesale firms intervene and the necessary contacts will be reduced to three hundred between producers and wholesalers plus three thousand between wholesalers and retailers, a total of three thousand three hundred instead of a hundred thousand. This difference can be well understood in the telephone business. If each individual subscriber was directly connected with every other in a district with a thousand subscribers, the necessary lines to bring them all in contact would be $999 + 998 + 997 + \dots$; but introduce one large telephone exchange and the necessary lines are reduced to one thousand connecting that exchange with each subscriber. Thus in a world of small-scale individual

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firms *indirect* sale through wholesalers is necessitated by the comparative economy of a large-scale 'wholesale' junction, pool or exchange interposed in the process of piece-meal distribution.

§ 5. *The Discrepancy of Theory and Fact* ✓

Enough has been said to show the glaring discrepancy between the logical theory of efficiency and the actual facts of industry. If we adopted the attitude of the engineer—as indeed the Russian Five Year Plan seems to have done—the facts might undoubtedly be brought closer to logic. Professor Miles Walker in the address just quoted considered that the engineering mind “involves a certain faith in the obtaining of good by logical procedure to that end. This quality of logicity is partly inherited, but only brought to full efficiency by being trained and spurred to overcome difficulties successfully”. Suppose a man with such an engineering mind to be given the powers of full dictatorship to reorganize British industry or for that matter the industry of any capitalist country. Undoubtedly he would insist upon larger-scale production. Professor Miles Walker constantly refers in his address to the cheapness of the electrical power generated and supplied by the nation-wide 'grid' system. But before sweeping away all the small-scale transactions and organizations of his country he would be wise to enquire how the existence of these apparently illogical scales of industrial production and organization can be explained. How far, in view of physical restrictions and human shortcomings, are they *in fact* illogical?

If there were an optimum scale of production and organization from the standpoint of efficiency, one

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might admit some degree of symmetrical deviation below and above that scale, due to chance factors. The optimum scale would then appear as a peak or modal frequency with the frequencies of the other scales gradually tapering off symmetrically around it.¹ But instead of such a normal distribution Table II shows that in actual distribution of sizes, plants are widely scattered through the whole range of possible sizes, are not symmetrically disposed around any mode, but are skew, and have indeed no easily distinguishable mode whatever. True, this scattered and often skew distribution of sizes of plant (and probably of firms too) in any one 'industry' is often apparent rather than real owing to the inclusion, under one official definition of 'industry', of plants that are by the test proposed in Chapter I really in several industries. Thus in America shipbuilding is officially taken as one industry but in fact establishments engaged in steel shipbuilding were usually distinct from those engaged in wooden shipbuilding. The former averaged 531 wage-earners per establishment in 1909, the latter 10 wage-earners.² Naturally, the combined figures have a somewhat 'bimodal' distribution. Again in England the investigation of Chapman and Ashton showed³ that the skew and widely scattered sizes of Lancashire cotton firms as measured in the number of spindles they possessed was partly due to the lumping together of the several divisions of the

¹ Some knowledge of elementary statistical terms is assumed. If the reader is not thus *au fait* he may be referred to any of the now numerous statistical text-books or to the Glossary in my *Statistical Methods in Economics and Political Science*.

² *The Integration of Industrial Operation*, p. 46, U.S. Census Monograph, 1924, which compares different years.

³ *Statistical Journal*, 1914.

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cotton industry in some of which, when isolated, there are traces of a typical 'modal' spindlage per firm.

Yet when all these permissible deviations and exceptions are allowed for, the fact remains of a far wider scatter of sizes of firms or plants than efficiency justifies. There is a real difficulty in finding any typical size in most industries, and even when there are signs of such a typical size it may be considerably less than the 'optimum' most efficient size. This smaller than optimum scale may be the logical consequence of physical restrictions limiting the size of the market, the sources of demand; or of physical restriction limiting the supply of raw materials or other factors of production.

The size of markets or of sources of supply may be physically restricted for three reasons.

(1) The more important materials may be dispersed and not easily transportable or the market geographically dispersed and the product not easily transportable.

(2) In the extreme case there may be no material or no product transported, direct extraction or 'service' having to be rendered at the site of the fixed but dispersed material, or at the habitat of the stationary but dispersed population.

(3) Product or material may not be uniform in its demand or supply may not be continuously used or available.

(1) Low transportability of *product* applies to house-building, baking, or printing, where transport of product is difficult either because of the sheer bulk and weight, or because physical deterioration sets in early or, as in the case of 'job' printing, because of the number of times the job has to pass backwards and forwards between producer and con-

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sumer before both are satisfied. Hence where the population that requires these products is physically scattered production must also be scattered in many small plants. *Materials* that are difficult to transport and are scattered geographically in small quantities are important in the brick making industry using heavy clay deposits and in the repairing and laundering of scattered property. Hence bricks and repairs cannot for physical reasons be produced in a few places on the scale that would be most efficient.

(2) Restriction of market is more inevitable yet when no product or material is transported. Industries like catering and entertaining, retailing, banking, commerce and finance, professions and personal attendance may be supplying services not products, and such supply must occur at the precise place and time where it is demanded. If population and hence demand is physically scattered then supply must be scattered in small organizations. Restriction of *supply* occurs analogously where there is no transferable raw material, the product being extracted from the land wherever it is found. If this fixed site is scattered geographically then production must be scattered. This is the case in agriculture—accounting for small-scale farms, and in mining if minerals are scattered and in shallow deposits.

(3) People vary in their physical needs ; they vary in the sizes and shapes of their feet, heads and bodies. Hence shoes, hats and clothing cannot be produced in enormous quantities to meet *one* uniform type of demand. Soil and mines vary physically in the quality of their supplies. Hence to that extent the working up of these raw materials into products cannot be achieved on a large scale. And not only is there variation in materials and need at any one time, there is also variation from time to time.

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Physical needs are different in summer and winter, in hot and cold climates. Different materials are harvested at different times or are accessible at different times. This instability makes continuous mass-production physically impossible.

But when all these physical reasons for small-scale production and organization have been taken into account there still remains a wide area where large-scale production and organization is physically possible but is not in fact adopted. The physical restrictions mentioned above apply indeed only to plants and not to firms. For a wider explanation we must turn to historical, psychological and sociological factors in the behaviour of the human consumers and producers. In this sense the facts are illogical. The engineer in his logic, based purely on physical and technical considerations, would not take account of them in trying to obtain maximum efficiency. He would assume complete adaptability in human nature to the conditions of production he imposes. Or, short of that, he would force human beings into accepting the more efficient production. He might be prepared not only to plan production but, as the Russians have in fact done, *to plan consumption*. This is apparently Professor Miles Walker's policy.

“There is a waste of heat in domestic fires, waste of by-products in the consumption of coal, thereby producing dirt; waste of fresh air by pollution; waste of sunshine. . . .

If engineers were in control, they would so order matters as to neutralize this waste at the source. . . . People should be prohibited by law from burning soft coal, as they are in Paris. They would then be compelled to burn carbon in a bright cheerful fire making no smoke, or to use gas.”¹

¹ British Association for the Advancement of Science, 1932, *Proceedings*, p. 134.

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If, however, the consumer is to be left free to demand the products and service he wants, however wasteful and inefficient their production or provision, then an entirely new set of conditions supervene—historical, psychological, sociological—that only the social sciences can fully comprehend.

The present structure of industry has its roots in history. Many of the small plants that exist at any one time have survived from days when small plants were necessitated by the restrictions of markets and sources of supply due to less efficient conditions of transport, communication, and technique generally. Logically under modern conditions the larger organization should immediately outdo the presumably less efficient smaller organization; but in fact there is a lag, owing to the stickiness or 'friction' of the market, i.e. the slow adaptation of the consumer, and owing on the production side also to the difficulties in the rapid growth of organizations.

The dead hand of past technical conditions is not the only source of illogical industrial organization. Industrial organization consists of human producers and its purpose is to provide human consumers with goods and services. Though it is logical to supply goods and services on a large scale at the minimum cost the human beings who are the producers and consumers may not permit this. As producers they may resist the necessary specialization, adjustment and reorganization; as consumers they may, by the variability of their demands, introduce uncertainty and small-scale buying. A close study must therefore be made of the attitude and behaviour of the consumer and the producer and their reactions to stimulus. The logic of technique outlined in Chapter I is belied by the facts adduced in the present chapter. But there may perhaps be a logic discoverable in

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human institutions that transcends the abstract principles of efficiency. Certainly human instincts, sentiments, complexes, habits and customs must be taken into account if our study is to be something more than a mere algebraic formula with the human factor as *X*. The following chapters will attempt to evaluate the human forces that make for irrational, illogical and inefficient organization ; but they will also attempt to show how such forces can be harnessed and stimulated to increase industrial efficiency and to bring actual organization somewhat nearer to a logical plan.

CHAPTER III
THE RELATIONS OF PRODUCER AND
CONSUMER

✓ § I. *Planned and Free Consumption*

EFFICIENCY, as defined in Chapter I, may be measured on any one of three levels—the physical, the pecuniary or economic, and the psycho-physiological. Hitherto we have considered merely the physical level. The physical volume per man-hour or machine-hour worked was held to be increased by large-scale production and operation. But as soon as relations with the consumer are considered, there comes the question whether the physical output turned out is needed or wanted or demanded. Engineers are telling us that, if left alone as technocrats to run the economic machine, they could produce things in much greater quantities per man or machine, and that they are baulked in doing so only by the middleman distributor and the economist. This may well be true; but suppose the consumer does not demand, or want, or need, those ‘things’, what then? The physical things will merely pile up in warehouses to rust and rot, and in the end it will be worse from the standpoint of efficiency than if they had never been made. Room will be taken up and when rot has gone far enough stench and disease will spread throughout the land. It is ultimately not the middleman or the economist who prevents the engineer’s dream

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from fulfilment, but the demand, wants, and needs of the consumer.

The distinction between demands, wants, and needs is vital to an understanding of the situation, and though repeatedly made by the much abused economist,¹ has apparently not yet been grasped by his engineering critic. Briefly, a *demand* is a want for which the consumer is prepared to pay, a *want* is any thing or service the consumer desires or seeks, and a *need* is any thing or service the consumer *ought* to have to keep alive or to keep efficient or simply because somebody (not necessarily himself) thinks he ought to have it. Thus while demand is an economic conception, want is psychological, and need, partly at least, ethical. And before the engineer sets about putting the world right, he must be clear whether he is going (1) merely to supply things and services the consumer wants and is prepared to pay for, i.e. demands; or (2) to supply things and services the consumer wants but can't always pay for; or (3) to supply things and services he (the engineer) thinks the consumer ought to have.

All of these three ultimate policies are feasible and have already to some extent been tried by different communities. The policy of supplying demands is the general tendency in capitalist countries but exceptions occur even there when houses are subsidised out of taxation or the use of roads allowed gratis.² The policy of supplying wants and needs appears to be the main trend of the communist plan of Soviet Russia. It is not the planning of produc-

¹ e.g. Florence, *Uplift in Economics*, § 6.

² For a classified list of goods and services thus supplied free or below cost even in capitalist countries, see Florence, *The Statistical Method in Economics and Political Science*, pp. 458-60.

tion that is so remarkably in contrast to capitalism ; large-scale capitalist firms do in fact attempt to plan their production. The remarkable feature of the Russian experiment is the *planning of consumption*. While under capitalism, goods and services are generally provided to be sold for a price that will yield a profit to the provider ; under the Soviet system prices and profits are not taken as the ultimate test—goods and services are provided as the dictatorship sees fit. Some goods and services that the consumer probably wants and demands may not be provided at all, e.g. fashionable clothes and other luxuries ; other goods and services that most consumers perhaps do not demand or even want are provided free, or at least rationed out for a ticket at a low price, simply because the consumer is considered to ' need ' them by some final economic authority such as the Russian Supreme Council of National Economy already described.¹

Clearly this consumption, planned as it is by the producers, enormously simplifies the organization of production. There is no need for marketing and fewer problems in distribution. So much of a series of articles is planned to be consumed and just so much is produced. Precisely those articles which can be produced economically in large quantities can be planned to be consumed,² and large-scale production and operation can be carried on with no fear of loss by lack of sales.

¹ Chap. I, p. 9.

² " The Soviet system of industrial production does not have to take account of changes in styles of clothing ; neither does it have to produce small quantities of articles of luxury which could be sold at a high price, but for which the production costs would also be very high. Small attention is given to refinement of detail, to polish, and to improvement of finish of products." —Hoover, *Economic Life of Soviet Russia*, p. 46.

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Convenient as this planning of consumption is to the engineer and producer generally, the fact must be faced that Western European and American communities will not permit their consumption to be planned by some supreme economic dictatorship. They do not 'want' the goods or services that any supreme authority would consider they 'needed'. They do not seem to contemplate even that complete equality of incomes which would ensure that every consumer had equal preference in satisfying his 'wants'. We must therefore abandon the immediate possibility of production for need or wants only and concentrate on the problems of a continued production for the 'demand' of the private consumers with different incomes.

The consumer thus left free to obtain whatever goods and services his income permits, immediately creates difficulties. He or she persists in demanding things in small lots thus preventing the economies of bulk-transactions. This habit of petty purchasing is chiefly due to the institution of the family household. Goods are purchased by the housewife for the consumption of a small scattered group usually of two to five persons and seldom more than seven or eight. Hence sales are on a small scale and have to be distributed on a small scale. And since the housewife has usually little reserve cash and is not selected primarily for her buying efficiency, there is a hand-to-mouth buying and a typical human fecklessness, caprice and lack of efficient calculation. This and the pleasure many housewives find in gossiping with the shopkeepers, may, and does, keep going many an inefficient hole-and-corner shop willing to extend credit but charging a necessarily high price to cover unnecessarily high retailing costs per unit of sales. If purchases were made in bulk as for the

army, for restaurants and for the factory canteens and kitchens so highly developed in Soviet Russia, the retailer and possibly the wholesaler as well, might be eliminated.

Given the institutions that Western civilization clings to, we must add heavy costs for the distribution of products among individuals in scattered families to the costs of actual production for the specific use of the private individual. If delivery-waggons are expected to take a loaf of fresh bread or a pound of coffee or some small toy miles away to a single house, the wages of the driver and the errand-boy, not to mention the fuel, and wear and tear of the vehicle must be added to the cost of distribution. The recent Belgian Commission on the high cost of living¹ considered it not unusual in the towns for a waggon costing in all 90 francs a day to distribute only 200 kilograms of bread selling, at 1.50 francs per kilogram, for a total of 300 francs. Thus mere delivery costs were 30 per cent of sale price. Long journeys may be (and are) avoided by distributing the shops themselves widely over the area of population; but in that case the scale of organization and operation will be small and probably expensive. The most logical solution would be so to group orders in time and place that *large-scale* deliveries from a *large* central store could be made to a whole neighbourhood. Possibly, if the community were keen enough to reduce the costs of distribution which they so loudly criticise, some compulsory regulation of buying habits to ensure such concentration of delivery might be agreed upon. But for the present we must assume free purchasing habits side by side with free consumption, and shall try

¹ See *Bulletin d'Information et de Documentation*, Nov. 25, 1932, Banque Nationale de Belgique.

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to disentangle the logic and the illogic of distribution to consumers under such circumstances.

As things are the gross margin exacted by the distributor certainly appears high. Statistics collected in England and America¹ show that in standard lines such as groceries, where the distribution margins are lowest, 20 per cent of the final price may go to the retailer and 9 per cent to the wholesaler, in addition to 12 per cent for the producer's own marketing cost. Thus total distributive charges will be 41 per cent, actual producing charges 59 per cent of the price to the final consumer. And grocers appear comparatively moderate in their charges. In the shoe trade the retail margin alone is about 30 per cent, in stationery 35 per cent, and in jewellery 40 per cent; in dry goods and also drugs the wholesale margin alone is about 17 per cent.

These margins are by no means, however, all middlemen's profit. When analysed it is found that about half the retail margins and two-fifths of the wholesale margins go in wages and salaries to employees, and much of the remainder in rent, interest, heat and light, maintenance, insurance, and advertisement. Where salaried managers control the business the actual dividend to the shareholder owners often appears indeed as a mere one or two per cent on sales. The popular clamour against distributive charges are thus often misdirected. It is not the net margin that accrues after costs are subtracted from gross margin that is excessive and

¹ See Dunlop, *Economic Journal*, September, 1929; McNair, *Economic Journal*, December, 1930; Secrist, *The Triumph of Mediocrity*. The actual figures given in the text are from the more accurate American sources, but English experience does not appear to differ much.

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capable of reduction, but the costs themselves. These costs remain even under co-operative trading and direct sale by integration of distribution with production; they are largely due to the great number of assistants employed, the large stocks held, the roomy and central sites required for display, and the means of transport that must be provided if the consumer insists on being served attentively at frequent intervals in small lots of wide variety neatly packed and delivered over great distances.

§ 2. *The Logic of Free Consumption*

The private consumer, free to purchase according to his individual demand however costly his methods of purchasing, might be expected to demand goods and services with a certain substratum of logic that would help the more logical producer in his struggle for standardization and efficient large-scale production.

In the first place every consumer's demand will be based, partly at least, on the need for living and must include essential foods, clothes, fuel and housing accommodation. These physical necessities will therefore be demanded on a large scale by the population as a whole.

Secondly, human nature is notoriously conventional. Plain gold wedding rings could be turned out by the hundred thousand with fair certainty of sale,¹ and aspidistra and lace curtains for front windows safely grown and manufactured for stock. Men's clothes are likewise preferred of uniform pattern. True, the vagaries of fashion dictate the clothes of women and alter styles from season to

¹ There are about 350,000 marriages per year in the United Kingdom and perhaps more engagements.

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season, but it must not be forgotten that at any *one* moment fashion implies a great degree of uniformity and conformity. Fashion as Nystrom¹ speculates probably depends on a quite natural hunger for companionship and a human instinct to accept a common uniform leadership.

“ One of the most characteristic results of the desire for companionship, that is, to be with other people, is a tendency to be like the people we want to be with, in appearance, in ways of thinking, in methods of expression, in manners, in dress and in fashions. The desire for companionship leads to conformity, and the group once formed of people with common basic interests and similarities in turn demands conformities not only from its present members, but also from those who would join the group.

There is another tendency that is closely associated with the hunger for companionship and which in turn is closely related to the desire to imitate, and that is the acceptance of authority of the group of which one desires to be a member, of another individual whom one may think of as a leader, or as an ideal which may serve as a guide to those with whom we would like to be companions. . . . Most people conform to the groups in which they belong. Groups are tyrannical. To conform is the easiest way of getting along; to be different in thinking, in manners, in dress or other forms of expression is to invite the belief in others that one is queer.”

A third characteristic of modern society that might be expected to help in large-scale production is the great proportion of industry engaged in making ‘producer’s goods’: machines and machine parts, equipment, tools, supplies, materials for further production. Two consequences should logically follow.

(1) The individual consumer’s vagaries need not affect the intermediate product, for highly differentiated articles may be made for the final consumer.

¹ *Economics of Fashion*, pp. 59, 60.

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by the same type of machine and of almost exactly similar parts differently arranged or finished.

(2) Buying and selling methods and habits between men of business might be expected to be more logical than where small individual families are being catered for not by a professional, but merely by a typical specimen of humanity.

Yet these expectations of logical behaviour are not always fulfilled. Mr. Hoover found the need for standardization and simplification among producer's as well as consumer's goods,¹ and the producer is presented with almost as many varieties of goods and services to choose from as the final consumer.

While the designs of producers' goods appear as various as those of consumers' goods, the methods of handling and passing on these goods from producer to producer are also almost as petty and niggling as the methods of distribution to the final consumer. Railways and other transport agencies are forced to haul producers' goods in small consignments necessitating small trucks and containers. Goods are wanted by producers in a hurry, usually owing to lack of planning, and the producers making for these producers must spend a large part of their energy and time in 'chasing' goods through their works for early delivery. Odd, irregular lots are ordered at odd, irregular times, and congest the orderly flow of work through the plant. Finally different producers even within one trade have entirely different methods of accounting and checking quality and vary in the reasonableness of their complaints. All these idiosyncrasies must be attended to and a 'complaint book' kept to sort the unreasonable from the reasonable. It was a maker of *producer's*

¹ See p. 25 above.

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goods who once complained to me that the ' consumer is always *unreasonable* '.

To sum up. A certain standardization of free consumption is logically indicated on the ground that certain forms of consumption must necessarily be preferred before others. The poorest class of final consumers must restrict expenditure to physically necessary wants. The next poorest—' lower-middle '-class of final consumers restricts expenditure in some degree to physical plus conventional necessities. The producer-consumer is a buyer of standard parts, materials, and machines, though not to the extent that might be expected.

This leaves the less poor final consumer as the main source of variability in consumption. But as Sir Arthur Salter has pointed out,¹ with average real incomes rising a continually smaller proportion of total demand will consist in the primary physical needs and the conventional necessities, and a larger proportion in the consumption of less necessary wants and demands.

“ A larger part of the purchasing capacity of the world is now available for articles that provide the amusements, pleasures, and comforts of life after the bare necessities have been satisfied, and these articles are in their nature more subject to the fickle changes of taste and fashion than the great stable products needed to sustain bare life and health.”

On the other hand if deviations from the average standard of consumption become smaller—if incomes should become more equal—wants will come nearer to primary needs. There will be more families with a comparatively low income that must mainly be devoted to food, clothing, housing and possibly some conventional necessities, and fewer families with

¹ *Recovery*, p. 30.

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very high incomes most of which might be spent on any sort of want. On the whole, however, it is doubtful whether incomes are becoming more equal in capitalist countries. Though the taxation of the incomes of the rich for transference to the poor has increased, yet where inheritance is permitted the differential birth-rate is continually creating more poor and fewer rich. Hence we must assume that variation and diversification in type of wants and demands will remain an important factor in free consumption. This contention may be contrary to the popular view that man in industrialized society is becoming daily more standardized, but it is a contention supported by such a long-sighted observer as Mr. Leonard Woolf.

“ In the aristocratic societies of the past ”, he writes,¹ “ there were enormous differences between the classes, but it is doubtful whether within each class there was any more room for free development of individuality than there is to-day. . . . The lower classes were standardized by poverty, overwork, and ignorance . . . there is certainly more scope for individuality and people are more highly individualized to-day than they have ever been in the world’s history.”

This individualization of man presents increasing difficulties to the producer. The consumer’s variability, his lack either of uniformity and conformity with others or of stability through a period of time involves uncertainty in the sale of the producer’s product. As Knight puts it :

“ The lower wants of man, those having in the greatest degree the nature of necessities, are the most stable and predictable. The higher up the scale we go, the larger the proportion of the æsthetic element and of social

¹ *After the Deluge*, pp. 269-70.

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suggestion there is involved in motivation, the greater becomes the uncertainty connected with foreseeing wants and satisfying them.”¹

§ 3. *The Vagaries of Free Production for Free Consumption*

The difficulty of variability in consumption is greatly magnified wherever production proceeds in long and round-about anticipation of demand, and wherever output, and the machinery for that output is made for stock. If production were entirely to order, as in the case of bespoke tailoring, there would be no risk of financial loss on account of output not saleable. But if large-scale production is to take place, part of the output at least must be made ahead of orders. The consumer is presented with all sorts of goods and services ready-made to choose from, but which of them will be chosen and sold is wrapt in uncertainty. The main, but uncertain, limit to large-scale production unavoidable if the consumer's demands are to be catered for, is the law of diminishing utility. As production of any article or the provision of any one service is increased, the demand for additional units of it will diminish and the price which will permit the sale of the total amount produced or provided must fall. The rate at which the price must be reduced to sell a given increase in the amount supplied is known as the elasticity of demand, demand being the more elastic the less the price-reduction required. In a system of free consumption this diminishing demand is due to two conditions: psycho-physiological satiation of the individual consumer's wants, and the economic exhaustion of the poorer consumer's wherewithal to

¹ *Risk, Uncertainty and Profit*, p. 265.

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pay. Thus the producer is deterred from large-scale production of the same article because he fears that the rich may be satiated after consuming a certain number of those articles, and the poor may never be able to consume more than an occasional unit.

But this natural physiological satiation, and the economic satiation that is unavoidable if inequalities in income persist, is increased by the producer's own tendency to multiply sorts and varieties of articles and services. The consumer, so far from being discouraged from abandoning one sort or variety of consumption, has so many varieties of the same kind of article or service to choose from, that he naturally turns from one to the other as his fancy tickles him. Here is a vicious circle that for the sake of efficiency should be avoided. For fear of satiating the consumer, the producer provides a variety of goods and services, each on a small uneconomical scale, but that very variety satiates the consumer of any one sort and stimulates him to turn from one sort to another, thus perpetuating the small scale of production.

Unquestionably the consumer, if left to himself, would want (and demand) *some* degree of variety. He may have artistic leanings, he may be a snob or a swank merely wanting to be different to other people and other classes, or to indulge in conspicuous waste¹; he may be exotic and crave novelty and titivation. Some degree of variety permitting the selection of the fittest is a condition of progress, but there is no unavoidable reason why such customers should be encouraged to multiply sub-varieties and sub-sub-varieties of consumption at any one time as they are by the bright salesman who represents the producer. As Mr. Henry Ford puts it²:

¹ See T. Veblen, *Theory of the Leisure Class*.

² *My Life and Work*, pp. 71-3.

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“ It is strange how, just as soon as an article becomes successful, somebody starts to think that it would be more successful if only it were different. There is a tendency to keep monkeying with styles and to spoil a good thing by changing it. The salesmen were insistent on increasing the line. They listened to the 5 per cent, the special customers who could say what they wanted, and forgot all about the 95 per cent, who just bought without making any fuss. . . .

Salesmen always want to cater to whims instead of acquiring sufficient knowledge of their product to be able to explain to the customer with the whim that what they have will satisfy his every requirement—that is, of course, provided what they have does satisfy those requirements.

Therefore in 1909 I announced one morning, without any previous warning, that in the future we were going to build only one model, that the model was going to be a ‘ Model T ’, and that the chassis would be exactly the same for all cars.”

In contrast to Mr. Ford’s policy of standardization in any given period, most producers not only provide the widest and wildest multiplicity of goods and services to suit every existing want (and demand) of possible consumers, but attempt to create or maintain species of the same variety of article or service that no consumer ever thought of wanting. The producer often imagines certain features are wanted and insists on pressing them on reluctant customers who would be quite satisfied with a plainer and perhaps cheaper article. Pottery is turned out that, according to some technical, professional, standard in the producer’s, but not necessarily in the lay customer’s mind, has qualities of perfection in its glaze or texture; metal goods are ground and finished to a degree far beyond the average consumer’s requirements (and purse); villas have gothic gadgets or features added, highly desirable in the

house-builder's eyes, but not necessarily so in those of the home-builder ; domestic utensils are produced in the weirdest and most inconvenient shapes. As Mr. Roger Fry¹ points out in his memorandum to the 'Gorell' Committee—

“It is hardly an exaggeration to say that some manufacturers have come to think that an artistic thing is a thing done according to a quite irrational and unintelligible caprice. Such men almost seem to arrive at design by considering what would be the natural, simple, direct way of making an object fulfil its purpose, and then doing the opposite.”

He gives as an instance of this illogicality a wash-hand basin made “with a very large base, sides rising straight and even curving inwards at the top and no rim”, which contradicts “every demand of utility. It requires many times as much water to get the required depth ; this multiplies the weight to an uncomfortable amount, and with no hand grip the difficulty of emptying the basin becomes a serious discomfort, whilst the incurved rim makes complete emptying almost impossible.” Mr. Roger Fry takes due note “of the excuse generally put forward by the manufacturer that he would be delighted to use better designs but that the degraded taste of the public as represented by the buyer will not allow him”. But he considers that the taste of the public at large is willing to accept better designs than it gets. “After all, people are forced to buy what is before them, but they often do so of sheer necessity and without approval.” The conventional dictum that the community of consumers is “the controlling employer in the productive system”, and “the business man simply one of

¹ *Report of Committee on Art and Industry appointed by the Board of Trade.*

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many faithful servants",¹ is no longer true as regards design of product. In fact, the initiative in proposing comes from the producer—the consumer merely disposes; he buys the proposition or leaves it on the retailer's shelf.

Hoyt² puts it clearly:

"Today certainly the producer tries to direct the preferences of the consumer. 'See this,' said the producer, 'and this; and this. I made them for you. Take them, try them. Now I'll think up something else for you.' The consumer is so confused by the multitude of offerings that he rarely conceives anything new himself. The incentive of use is usually a slow incentive compared to the incentive of profits. The desire for conspicuous rewards to be won from profits in production gives the producer a flying start. Whatever can be made by the use of power machinery, that the producer tries to make. Then he sets about to teach the consumers to want it."

The climax to this orgy of designs is reached at Christmas time when the shops are filled with 'novelties' that no consumer would think of wanting for himself and which he is only 'taught' to buy (for others) in the glow of the Yuletide spirit.

The fact that machinery permits any one given pattern to be reproduced in thousands of copies might be expected to make the producer careful of his original design. Curiously enough, this is not so. So far from studying the consumer's wants and taste and possibly trying to educate him to some standard model found most fit for its purpose, the producer appears almost to treat him with contempt. I once asked the foreman of a department specializing in expensive cut-glass ware, who was responsible for the design which appeared to me atrocious. The answer was "Oh, me or the boss,

¹ Arnold Plant, *Economica*, Feb. 1932.

² *The Consumption of Wealth*, p. III.

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when we have the time to spare." If a special designer does exist in the factory his education in design is often no deeper than a night-school, and his aim no higher than to compromise between existing and often incompatible 'best sellers'. In the use of colour he is timorous or purely traditional. To quote Mr. Roger Fry again :

"Colour is thought of either as 'quiet' or 'gay'". The idea of 'quiet' colour is to use muddy browns, degraded reds, and dirty greens more or less indiscriminately, whilst 'gay' colour consists in a very restricted range of oranges, scarlets and greens. In such circles, the idea that colour is a question of harmonies which are almost as distinct as musical harmonies scarcely seems to have occurred at all."¹

Free consumption aided and abetted by free production has resulted in such a multiplication of sub-varieties of goods and services that a few really different well thought out patterns cannot at any one time be produced on a large scale to satisfy any given want. But confusion is made worse confounded by the changes in demand through a period of time, consequent upon unstable incomes. This again is due to a vicious circle in the relations of producers and consumers. Fear of a fall in the prices of his products induces the producer in his capacity as employer to dismiss employees, and in his capacity as investor to cease ordering machines and equipment. The dismissed employees will no longer have the means to demand even those products that they used to consume quite steadily, and the makers of machines and other producer's goods will find their market collapsing. Thus production is thrown still further out of gear. No class of consumption, however stable in normal times, is immune

¹ *Report of Committee on Art and Industry*, p. III.

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from this type of variation that is due to the productive machine itself. The poorest class must cut down their consumption of needs, the next poorest their conventional necessities, just as consumers of producer's goods cut down *their* orders. Hence this fluctuation of demand from time to time presents a more serious limit to large-scale production methods than the diminishing utility at any one time. Plant and organization laid down against a fairly stable maintenance or development of consumption is rendered idle and production may become more costly than if no such plant or organization had ever been introduced. It is this very risk of fluctuations in consumption that has in fact induced producers to 'hedge' by lateral integration (particularly of the divergent type) which implies a smaller and less efficient scale of operation.¹

In the next chapter will be taken up the question of how far the producer as an employer of labour can avoid these fluctuations by equalizing employment instead of dismissing men outright, when consumption appears likely to fall. For the present we are concerned with methods of foreseeing and thus forestalling both the variability of demand among consumers at any one time and the trend and fluctuations of demand from time to time.

§ 4. *Forecasting and Market Research*

In spite of these vagaries in the products and methods of production wanted and demanded both by final consumers and the producer consumers, a certain logic, as we have seen, does run through their demands. It is up to the producer to find the precise manifestations of this logic, and base his

¹ See Chapter I, § 3.

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marketing policy upon it, if he, in his turn, is to be logical.

First of all he should contrive to analyse his customers or possible customers into fairly uniform, standard types or classes, and to find the relative frequency of each type. There are, first of all, the income classes. Analysis of consumers according to their income is important because of the more stable demands based on physical and conventional needs to be expected of the poorer classes. But cutting across the income classification are many other useful classifications,¹ notably that by personal characteristics. In Chapter II it was pointed out that people vary physically in the sizes and shapes of their bodies and consequently *need* different sizes and shapes of clothes and shoes. But it is only recently that shoe manufacturers have made a study of what the statistician calls the 'frequency distribution' of lengths and widths of feet. Thus it was found ² that out of every hundred men in America ninety required shoes of fairly normal width and length. Of these, three required the 6 length shoes of normal range of widths, eight the 6½ length, fourteen the 7 length, eighteen the 7½ length, twenty the 8 length, thirteen the 8½ length, eight the 9 length, three the 9½ length, two the 10 length and one the 11 length. These 90 per cent with normal size of feet could be further sub-divided according to the precise width of shoe required within the normal range. Thus among the twenty men requiring the most frequently required length (i.e. No. 8 size), one would require B width, three C width, seven D width, eight E width and one EE width.

¹ e.g. By age, sex, occupation, marital condition, habitat. See Redmayne and Weeks, *Market Research*, Chap. II.

² Nystrom, *Economics of Fashion*, p. 460.

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With this knowledge, making for stock in anticipation of demand is no longer an uncertain gamble as far as the proportion of 'out' and of various 'in' sizes are concerned. The analysis of customers may extend beyond their physical characteristics. The possibilities of finding a frequency distribution of psychological types for which suitable designs in clothes may be adopted has occurred to several vigilant American couturiers not too much obsessed, or checked, by a sense of the humour of their investigations. According to Nystrom,¹ "Considerable effort and some progress have been made in the way of classifying customers, particularly women consumers, according to personality types." The classification of personality types most frequently used begins with three fundamental types: the dramatic—tall, dignified and stately; the ingenue—short to medium height, light to medium complexion, sprightly or animated expression; and the athletic—broad-shouldered, vigorous and active. Three other types are derived from these, namely, softened dramatic, athletic ingenue, and ingenue-athletic. "One of the best-known stores on the Pacific Coast", Nystrom continues, "has devised a list of personality types which is fairly representative of the work done in this line."

These are entitled 'Romantic', 'Statuesque', 'Artistic', 'Picturesque', 'Modern', and 'Conventional' respectively and for each the correct type of clothing is specified. For the romantic type with the "trick of looking as though one adored poetry and might even keep a diary", panniers, basques and puffings are indicated in fabrics such as taffeta and organdie, with delicate colours and rose-wreathed hats, parasols and sashes. For

¹ Nystrom, *Economics of Fashion*, pp. 478-80.

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the statuesque type, "tall, a bit remote", black velvet evening gowns, trains, trailing negligees, picture hats and feather fans are indicated. For the artistic type, "a bit enigmatic, usually with a suggestion of the foreign", vivid colours, bizarre embroideries, eccentric jewellery, Egyptian, Russian, Chinese motifs and colouring and peasant necklines and berets are indicated. Thus an apparently bewildering and uncertain variety of wants can be reduced to certain uniform types for which specific designs can be produced.

In addition to tabulating customers into uniform stable types, the producer should also seek to forecast changes in consumption, either through a period of time or as a consequence of changes in prices. This involves studying (1) the cycles of fashion, (2) the changes in wants and demands with variations in incomes, and (3) the likely changes in incomes upon which these changes in demand depend.

(1) Can prediction of fashion be reduced to a science?

"A necessary step towards better merchandising of fashion goods would be to get more information about fashion movements, in other words, to substitute facts for guesses, reasoning for hunches, and a bit of science for the prevailing mystery regarding fashion. When we know more about fashion movements, we will make our merchandising plans work with them instead of, as at present in a large number of cases, independently of them, and too often actually against them. Merchandising success seems to be the result of working with trends. The business concern working with the trend of fashion makes progress easily. The business concern working against fashion has a hard time of it. The problem from the standpoint of industry is how to shift productive ability from lines of waning fashion interest to lines in growing demand. The problem for both producer and

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distributor is to find out as promptly as possible what lines are waning and what ones are growing stronger in the fashion field.”¹

A statistical study by Kroeber of these movements in women's fashions is summarized by Nystrom.² Kroeber took certain measurable features, such as the height of the skirt edge from the ground, the width or length of waists, or the width of the décolletage, and expressed these as a percentage of the total height of figure. These percentages were then plotted on graphs for every year between 1845 and 1920. Some possibly significant cycles appear. Skirts rapidly became wider from 1844 to 1859, when the width of the skirt more than equalled the entire height of the figure. This lasted six or seven years; then a decline set in and finally reached the hobble period—1909 to 1911. Widths then increased again to 1917. Skirts got longer up to 1860, remained stationary to 1875, then gradually shortened up to 1887, got longer up to 1897, remained there till 1910, shortened (amazingly) to 1929 and are now lengthening again.

The importance to the producer of knowing when the fashion for any of his products is likely to be growing and when petering out has led some logical producers of novelties and 'art goods' to plot out curves of the probable life and vitality of each of their designs. This gives them time to prepare for putting further novelties on the market, when they forecast that senility will be approaching the original design.

(2) The trend of changes in consumers' wants and demands with changes in their income can also be followed by recourse to inductive statistical enquiry, but here *a priori* reasons which appear quite

¹ Nystrom, *Economics of Fashion*, p. 17. ² *op. cit.*, pp. 38-43.

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absent from the changes of fashion, can also come to the aid of the logically-minded producer.

Since the war the statistics of the numbers engaged in specific industries show definitely that in England all industries connected with housing have expanded more than most other industries. While the average increase in all workers nationally insured against unemployment between 1923 and 1929 was 8.4 per cent, the employees engaged in making artificial stone and concrete increased 72.1 per cent, in making heating and ventilating apparatus 61.1 per cent, in electrical wiring and contracting 44.4 per cent, in making paint and varnish 44.2 per cent, in making bricks, tiles, pipes, etc., 41.4 per cent, in stone-quarrying 39.6 per cent, in slate-quarrying 38.5 per cent, in making wall-paper 35.9 per cent, and in furniture making and upholstering 33.1 per cent. Among the total of 101 industries distinguished by the Ministry of Labour, the only other industries thus expanding by four times or more the average rate of increase of 8.4 per cent were seven in number as against the eleven connected with housing mentioned above. Two of these were non-producing: tramway and omnibus with a 46.8 per cent increase, and distribution with a 36.4 per cent increase; the remainder were largely the poor man's luxuries: silk and artificial silk (increase 103.4 per cent), scientific and photographic instruments (54.5 per cent increase), musical instruments (49.9 per cent increase), electrical engineering (41.2 per cent increase), and stationery requisites (35.2 per cent increase).¹

Similarly in America between 1919 and 1925 among the twelve industries increasing most in the number of wage-earners employed, eight were aux-

¹ *Ministry of Labour Gazette*, Nov. 1929, pp. 392-7.

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iliary to housing: Plumber's supplies (increase of 145 per cent), cement (increase of 51 per cent), carpets and rugs (increase of 48 per cent), steam fittings (increase of 38 per cent), brickmaking (increase of 34 per cent), furniture (increase of 29 per cent), hardware (increase of 23 per cent), paints and varnishes (increase of 19 per cent). The remaining four industries in the twelve expanding most were sugar (increase of 29 per cent), dyeing and finishing cloths (increase of 27 per cent), shirts (increase of 27 per cent), and automobiles (increase of 24 per cent).

These figures show a general secular trend towards an increased desire for housing refinements and all its auxiliary products, with some trace of increased desire for clothing and new inventions for consumers' immediate enjoyment. If producers of the type of goods required followed the figures and adopted or adapted their products accordingly they might reduce their risks of unsold merchandise. For the trend displayed by these statistics is not mere accident; the trend might indeed have been expected *a priori* from what we have called the logic of consumption. As real wages rise (i.e. money wages in terms of retail prices) in the way they were doing both in America and England between 1923 and 1930 people may be expected to use the money saved on account of cheaper prices for bare necessities, partly at least in other directions, and thus to spend proportionately less of their total income on the necessary food and fuel and more on comparative luxury such as more refined house furnishings. This logical expectation of high elasticity in the demand for the simpler luxuries and low elasticity of demand in bare necessities can be backed by statistics of family budgets and is the burden of the law Engel formulated as

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far back as 1840—a law confirmed by every new investigation of family budgets at different income levels. Perhaps the most thorough investigation of this sort ever undertaken has just been completed in Germany,¹ and the summarized results are presented in Table V. Five income classes are given for wage-earning workmen: Below 2,500 Reichsmarks per year, i.e. below £125 at mint par; between 2,500 and 3,000 Reichsmarks, i.e. between £125 and £150; and so on up to the highest class with income above 4,300 Reichsmarks equivalent to above £215. Six somewhat similar income classes were given for salaried employees. It will be seen that while the percentage of total expenditure spent on food, heat and light, and rent, steadily declines with rising incomes in both categories, that spent on clothing and furniture and miscellaneous items definitely tends to rise. Thus as families in the same category increase in income, their demand should increase for clothing, furniture and miscellaneous products relatively to that for food, house-building and domestic heat and light. But if we compare the same income level in the two categories it will be seen that the salaried employee spends a smaller percentage of an equal income on his food and clothes, but rather more on heat and light, and considerably more on furniture, and very much more on rent. This latter comparison is important since in all industrial countries a transference of people is undoubtedly taking place out of the wage-earning and into the salaried category,² which apparently involves increased demand for house-building as well as heat and light and furniture.

¹ Statistisches Reichsamt. Summarized in *Wirtschaft und Statistik*, No. 20, 1929; No. 2, 1930.

² See below, Chap. IV, § 5.

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TABLE V

PERCENTAGE OF TOTAL EXPENDITURE SPENT ON SPECIFIED ITEMS OF CONSUMPTION

Germany, 1927-8

Income-Class. Marks (£ equivalent).	Clothes.	Hous- ing.	Heat and Light.	Furni- ture.	Food.	Miscel- laneous.
WAGE EARNERS * :						
Up to 2,500 RM. (—£125) . . .	10.4	11.9	4.3	3.1	47.9	22.4
2,500-3,000 RM. (—£150) . . .	11.6	10.6	4.0	3.2	47.3	23.3
3,000-3,600 RM. (—£180) . . .	12.7	10.2	3.7	3.6	45.6	24.2
3,600-4,300 RM. (—£215) . . .	13.4	9.4	3.5	4.1	44.5	25.1
Above 4,300 RM. (—£215--)	14.6	8.8	2.8	5.3	41.5	27.0
SALARIED STAFF † :						
Up to 3,000 RM. (—£150) . . .	11.0	14.4	4.3	3.5	41.6	25.2
3,000-3,600 RM. (—£180) . . .	12.5	11.9	4.0	4.5	39.8	27.3
3,600-4,300 RM. (—£215) . . .	12.0	11.8	3.7	4.6	37.6	30.3
4,300-5,100 RM. (—£255) . . .	12.9	11.5	3.6	5.3	35.0	31.7
5,100-6,100 RM. (—£305) . . .	12.8	11.3	3.4	6.4	33.6	32.5
Above 6,100 RM. (—£305--)	13.1	11.0	3.1	6.7	28.1	38.0

* *Wirtschaft und Statistik*, 1929, No. 20.

† *op. cit.*, 1930, No. 2.

Housing accommodation and furnishings is only one instance of the type of want that is likely to increase relatively to others. Progress in standards of living is likely to involve a fairly stationary, inelastic expenditure on the cheaper forms in which nutriment can be obtained such as bread, and more elastic expenditure on meat, milk, vegetables and table delicacies and dainties. It is, possibly, for this reason that the price of the continually increasing supplies of wheat is falling (1930-2) so disastrously for the wheat farmer. Additional services are also likely to be demanded with increasing standards. Education certainly expanded enormously in America between 1923 and 1929 as real incomes rose and more seems to be expected in the way of 'packaging', displaying, delivering and the distribution of goods generally.

But there is at present an artificial limit set to progress in the consuming habits of the working

class. What leisure the industrial employee obtains is largely involuntary in the form of unemployment, and is coupled with such diminution in his income that he is unable to use his leisure for consumption. When the producer in his capacity as an employer of labour dismisses men because of uncertainty as to the marketing of his products and the fear that consumption is falling, he throws consumption still further out of gear since the unemployed who now have time to enjoy goods and services are precisely those who cannot demand them.

(3) This brings us to the investigation of the third sort of changes in consumption, namely fluctuations in income itself, fluctuations in the ability to purchase upon which depend changes in business demand apart from psychological changes in wants.

So much has been written about the forecasting of general business conditions that it is only necessary here to indicate in broad outline the purpose and methods of forecasting, omitting entirely the underlying monetary or other causes of changes in those conditions. The purpose of business forecasting which is not always clearly distinguished from the methods of achieving that purpose, is to foretell probable aggregate sales. For, given the aggregate costs, it is not the future prices of a unit of his product that the producer wants to know but his aggregate receipts. This, when aggregate costs are subtracted, will tell him his total profit.¹ Index numbers telling him the course of prices for a unit of an article are therefore useful only (1) as a factor in aggregate receipts or sales, the other factor being the physical volume of output ; or (2) as a signal of what may be expected in the way of aggregate sales.

¹ If costs cannot be taken as given, then there must be a forecast of aggregate costs as well as of aggregate receipts.

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Unfortunately while there are plenty of index numbers of prices, particularly of wholesale prices of food and raw materials in most industrially developed countries; index numbers of aggregate receipts have not been worked out adequately. The producer is thus left to find the course of aggregate receipts by multiplying the two factors already mentioned, namely the price per unit index, and the index of physical volume of output, i.e. the *number* of units made. Even this indirect method is unsatisfactory since the prices required are the prices of the products the producer makes rather than of the raw materials which predominate in most index numbers; while the output predominating in the few physical volume indices available are those of only a few staple industries.

For England the most adequate receipts or sales index is probably one arrived at by *multiplying the Board of Trade's quarterly physical volume index by the Board of Trade's quarterly index of export values.*¹ The former includes more types of product than the London and Cambridge quarterly physical volume index and the latter includes the prices of all goods exported, most of them being manufactured products and not raw materials.

Assuming that by this or some other method a satisfactory index of aggregate sales is obtained for

¹ Both of these will be found conveniently juxtaposed in the supplements of charts and statistics issued with the February, May, August and November numbers of the *Ministry of Labour Gazette*. Wallace in his *Business Forecasting* considers Unemployment the better index of business activity, since this includes distribution and transport. But this index is likely to be fallacious, when with the same level of activity machines are displacing men and producing technological unemployment. An ideal index might be arrived at by taking a weighted average of unemployment and the index suggested in the text.

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a sufficiently long period in the past, it may be possible to trace a series of repeated cycles of prosperity and depression extending over similar spans of years, leading to the expectation of further cycles of similar span in the future. But if such exact recurrence in the index of sales can neither be found in the past nor expected of the future, it may yet be possible to find symptoms in other indices of a coming change in aggregate sales. It may be found that changes in aggregate sales are always preceded by, say, changes in prices of industrial shares on the Stock Exchange, or in rates of short-term interest or in wholesale prices of goods. In that case the producer will be provided with a signal, red or green as the case may be, of coming depression or prosperity.

It must be admitted that the numerous forecasting services that have recently sprung up, particularly in America, have not hitherto been very successful in warning the industrialist of what was in store for him. Yet with improving statistical field-work and measurement these forecasts, if intelligently interpreted by the producer, should prevent his being influenced by wild hearsay rumours and seized by that kind of herd-instinct which appears as panic at times of falling sales and purchases, and yields to unthinking optimism in times of prosperity. He should be enabled to act more logically on the basis of contemporary facts, former experiences, and economic reasoning.

To sum up. All that has been said hitherto about the shortcomings of the free producer in relation to the free consumer points to the necessity of a market research and forecasting on the part of the producer which will look into the facts and examine the possibilities of the actual situation. Market research, apart from the question of channels of distribution, aims at determining (1) the design of the product,

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the qualities and varieties to be provided, (2) the amount of each quality or variety to be provided, and (3) the price to be charged.

Instead of a multitude of designs hit upon by chance fumbling, imitation or compromise, finding sales only by a process of trial and error—most designs being errors—efficiency requires that within one line of goods only a moderate number of carefully thought-out designs be standardized which will both answer wants of most consumers and be amenable to large-scale production. This policy of simplification based on previous research has been carried out by a number of firms in different industries such as shoe-making,¹ aeroplane making,² and printing,³ and has resulted in great economies and greater output.

The amounts to be produced in each design and the prices to be charged for them depend at any one time on the elasticity of demand,⁴ and over a period of time, on fluctuations in their saleability; and the policy of the producer must be based on some estimate of each of these. If his market research finds demand to be elastic and his forecasting indicates a future fall in general sales receipts he should consider lowering prices and making the same output as before. If demand is estimated as elastic and sales as rising, he should consider increasing his output at the same or a lower price. If demand is estimated as inelastic and sales as rising he may consider raising his prices. But it is only if demand is estimated as inelastic and sales receipts as likely to fall in the future that restriction of output should be considered.

¹ See *Bulletin of the International Management Institute*, June, 1930.

² *op. cit.*, Aug. 1931. Here it was a question of giving each shift the same design to work on.

³ Chap. II, § 1.

⁴ See above § 3, p. 60.

At present the typical manufacturer probably does not sufficiently adapt his price and amount of output policy to general economic conditions. When faced by falling sales at a fixed price he is inclined, in contrast with the middleman retailer who initiates half-yearly clearance sales, to dismiss men and contract output on the untested assumption that the demand for his product is inelastic. Prices are not brought down sufficiently in slack times and quantity of output not therefore maintained, partly because of a policy of keeping up a standard margin of profit on turnover (10 per cent seems for some reason to be a favourite sticking point); partly because the true incidence of overhead costs is not yet appreciated in practical business circles.

Slack trade appears to increase overhead costs per unit unduly because of the peculiar method of costing adopted. Most business men seem quite ignorant of the marginal principle, and when considering the acceptance or rejection of additional business think in terms of average costs rather than of marginal or differential cost, even though the new business under consideration would not make a pennyworth of difference to many of their overhead items. Thus additions to the work of a labour-saving machine at present half idle, would not add to its depreciation on account of exposure or obsolescence but would only add to its wear and tear. Nor would the additional work, if accepted, increase the cost of buildings, conveyors, etc. There are many overhead costs in labour-saving plant that are fixed over a long period and not increased with the additional business obtainable in slack years by lowering prices. These fixed costs must be paid for in the course of the long period that consists of both slack and boom phases; but they need not be paid for at all in the

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slack years so long as compensation is found in boom years, when a very slight rise in price per unit may, owing to large sales, result in a sufficiently increased aggregate gross profit. The optimum expenditure on labour saving plant should most certainly not be determined by considering the *average* cost per unit of *all* the overhead items in the slack period, when units of output are at their minimum.

§ 5. *Competition and Combination*

To these suggestions of policy based on market research and forecasting, however, the business men actually engaged in supplying the consumer will raise one insuperable objection. It can be expressed in one word—competition. One or a few producers, they will say, can affect nothing. Supposing any producer does, by market research, gauge correctly the future of the market and the present elasticity of demand, and suppose he foresees correctly that by lowering prices 10 per cent a thousand more of the sort of product he makes can be sold next year. Can he proceed with confidence to manufacture a thousand more units and to reorganize his total production by such methods of large-scale operation that the average cost can be reduced by 10 per cent? By no means. First of all, he does not know how far his competitors have not made the same correct estimates of the market and will not all of them be trying to capture the demand for the additional thousand units. And since he *and* his rivals can't each and all of them sell the additional thousand units, it is best to be cautious and continue with the old and small-scale methods for fear of an over-production in the industry as a whole.

But suppose, in the second case, that he knows

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his competitors are all old-fashioned and unlikely to have undertaken any market research, or to have any inkling of the possible lucrative expansion of the market. He might then suppose that new large-scale methods of operation permitting a 10 per cent cut in his costs and price, would not only capture the new thousand units but eat into his competitors original trade to the tune of several additional thousand. This, on the theory of an economic man, certainly ought to happen. If a consumer can get the same article 10 per cent cheaper he should (if he is as alert and calculating as some economists assume) immediately and eagerly transfer his custom to the cheaper producer. But again, this *in fact* is not so. Modern economists admit that there is generally a 'stickiness', 'friction' or imperfection in any market which prevents the cheaper products from having an infinite elasticity of demand and capturing the whole demand for that product. Almost every producer has some pocket of monopoly, since there is usually a willingness on the part of the group of buyers who constitute a firm's clientele to pay, if necessary, something extra in order to obtain the goods from a particular firm rather than from any other.¹ This pocketing of a clientele can be achieved even by a trade-mark or a doctor's practice and will outlive the changing of the actual producer, so that the consumer's custom can actually be bought and sold in the form of goodwill. Moreover, if there were any marked tendency for the consumer to desert his original but more expensive producer, that producer, whatever his costs and lack of foresight, would be likely to cut prices to meet the new competition. Hence the (cheap) large-scale producer would have

¹ P. Sraffa, *The Laws of Returns under Competitive Conditions*, *Economic Journal*, Dec. 1926.

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an up-hill fight to dispose of his additional product, and the increased market costs necessitated might soon affect his decreased producing costs.

Thus under conditions of competition the producer cannot be logical and reduce his costs and price to capture the market either because his fellow-producer may be equally logical and prepared to capture the market or at least determined not to lose markets ; or if other producers are not logical and determined, he cannot be logical, because the consumers are illogical and refuse to be captured even to their own economic advantage. Have we then reached a dead end ?

There are two possible exits to the apparent impasse. One is combination between erstwhile competitors so that they may between them share, in some logical manner, the original and the forecasted increase in demand. The other exit is to break down the competing producers resources or the consumer's illogic.

Much of the general policy of industrial firms have always been questions of war or peace in their relations with other firms. In fact, we speak of trade wars though often under the delusion that these only occur between producers of different nationality. Thus bargaining power, strategy, tactics, attacks, espionage and other military terms can suitably form part of the producer's vocabulary as they do of his practice, and part of the political science of business lies in estimating the relative power of competing businesses.¹

The normal method of defeating inefficient producers under the system of full-blooded competition was to bankrupt them ; and during early capitalism

¹ See Catlin, *Principles of Politics*, for the general theory of 'power politics'.

new or more efficient firms could and probably did replace others, as (in Marshall's famous analogy) new trees in a forest replace the old. The 'representative firm' might thus gradually have become larger. But technical and financial conditions such as the difficulty of new firms immediately securing the expensive plant needed for optimum efficiency have latterly slowed down this process of replacement. Like modern wars between States there is a heavy price to pay by the ultimate victor no less than by the victim. Cut-throat price-cutting during a war between firms with high fixed costs may have to proceed to a level below that of the prime costs even of the more efficient firm, and for a considerable time after the war may involve 'spoiling the market'. Consumers may have stocked up during the time of cut prices and may have no need to buy when hostilities have ceased. Realizing this loss to both sides the modern strategy of industrial warfare is usually to bring to terms rather than to fight to a finish. Competition is not necessarily a tactic opposed to combination but may merely be its prelude. You do not expect to bankrupt your competitor but perhaps merely to bring him into some alliance with you, as Prussia after the war of 1886 brought Austria into what ultimately became the Triple Alliance.

The important question in that case is whether the more efficient firm will become the predominant partner in the alliance or vice versa. When in the past the consumer stuck to his original supplier though his products were dearer for the same quality, and thus obstructed, and ultimately perhaps bankrupted new and possibly more efficient competitors, it was often from some instinct or sentiment of loyalty or camaraderie. His supplier might have

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been some 'pal' of his, or at least a good fellow whom he did not wish to hurt or offend. But it is doubtful whether this sweet human reasonableness in favour of friends however inefficient, will continue under the attack of 'high pressure' salesmanship, and intensive advertising directed towards the selling of specific brands of goods each produced on a large scale. Formerly goods and services were bought because so-and-so made them or so-and-so sold them and *he* could be trusted; but except for so-called prestige advertising, goods and services are now brought to the attention of the consumer on their own alleged merits or their low-price, and clearly it is not usually worth advertising articles not provided on a relatively large scale.

It is true that these new marketing tactics introduce an uneconomic illogical bias of their own. Consumers react to emotional appeals and sentimental clap-trap, are influenced by telling posters with bright colours and snappy wise-cracks, and are gulled by half-truths flashily presented. The mere repetition of the name of a brand may finally put it over. Consumers fail to inspect quality or check the prices of the goods themselves. Nevertheless, I believe that the new tactics, by loosening the rigid traditional ties of sentiment and instinct and getting the consumer out of a rut, are paving the way for the greater use of logic by the consumer. You cannot 'crab' loyalty and other human sentiments and traditions as you can advertisements and high-pressure talk. In fact, reaction against the sillier forms of advertising has already appeared in America in the shape of journals with a huge circulation like *Ballyhoo* parodying well-known advertisements, and of societies of consumers for their self-protection against 'hot air', like the American Consumer's

Research Inc. which issues bulletins exposing 'rackets' and the puffing of inferior goods. The quality of advertised goods are analysed by experts and openly given good or bad marks according to their 'value for money'.

Once freed from their 'ballyhoo', advertising permits consumers conveniently to compare prices and designs of competing products and to prefer the best value for money; advertising may teach them to like the article which is cheap because produced by economical methods and even to alter their habits if these involve unnecessary and illogical expenditure of money and energy.¹ New designs get a chance against conventional patterns.

In short, with the modern spirit of scepticism coupled with wider education, logical comparison is taking the place of both gullibility and sentiment,² and the best man may now be more likely to win over the consumer on his merits as the most efficient producer. Advertising can be used to stimulate the consumer to demand the article which by large-scale methods is the most efficiently produced, and gradually to get trade into fewer hands thus enabling each to produce on an ever larger scale. This does not necessarily mean monopoly. There is a long way to go between the thousands of firms to be found in so many industries and say the dozen or so of large firms or combinations that might each have a sufficient portion of the trade to be able to produce efficiently on a large scale.

¹ Russian propaganda to put over the efficiency methods of the Five Year Plan largely consists in advertising posters.

² A large exception to this appears in the Nationalism which is now used to sell goods. 'Buy British' or 'Act American' is precisely on a par with the uneconomic loyalty to a producer because he is a 'pal'.

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Undoubtedly, however, a monopoly results in definite economies over and above those securable even under 'oligopoly' where only a few large-operation firms are competing. (1) In some cases concentration of all production and service of a given sort in the hands of one firm is the only method of obtaining a sufficiently large scale of operation to yield maximum efficiency. Examples occur in the supply of water, gas, electricity and telephone service.¹ (2) Consumers faced by a monopoly can be forced to be reasonable in the designs demanded. They would have to accept any standardized cheaply producible article or go without. And the trading habits that are often equally unreasonable and illogical could also be eliminated. A firm or an association of firms that had a monopoly of transport or credit facilities could force traders to send consignments in bulk and to pay within a reasonable time. Without monopoly such logical standardization would be impossible since even one competitor could 'cut the throat' of standards however reasonable. (3) While competition exists, even though it is only between two organizations in some market, high marketing and advertising costs are likely to persist. It is not till monopoly is achieved that the combative element in these costs is eliminated.

The conclusion is thus reached that if the marketing costs of larger-scale operation are not to offset the production costs and in some cases if production costs are to be at a minimum, monopoly may have to be established. And since monopoly achieved by a knock-out war among competitors is extremely costly under modern conditions, establishment of monopoly by combination among the erstwhile com-

¹ In these 'octopoid' industries distribution to scattered homes has been effectively mechanized by piping or wiring.

petitors within one market is indicated as the most efficient course for the elimination of waste and inefficiency. Now this is the essential aim of the 'rationalization' movement that loomed so large in public utterances and the public press during the period of prosperity between 1927 and 1929; and though now somewhat *démodé* the absence of talk about it probably corresponds to rapid progress in actual rationalization. Good fires have no smoke.

§ 6. *Rationalization and Nationalization*

The aim of the rationalization movement is to eliminate waste and inefficiency "scientifically and logically" by some sort of joint action between all the firms within one industry.¹ Paraphrasing Mr. Joseph Chamberlain's cry of 1903 to "think imperially", the slogan of rationalization might well be "think industrially". It is often difficult, as shown in Chapter I, to distinguish where one industry ends and another begins, but to the rationalizers the relevant definition is clearly a group of producers competing in the same market for a similar type of consumption.

The chief inefficiency which rationalization seems likely to eliminate is in fact small-scale marketing and distribution. E. A. G. Robinson has pointed out² that the 'optimum', most efficient, scale for marketing is usually larger than that for the technique or management of production. Hence the different optimum scales for marketing and produc-

¹ The science and logic involved has been dealt with in Chapter I in so far as it effects the scale of production, and will be considered further in Chapters V to VII as it affects the stimulation of the several agents of production.

² *Structure of Competitive Industry*, p. 82.

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tion might be reconciled by some association, cartel, or combine of smaller-scale producers for larger-scale marketing. 'Scale', in Robinson's terminology, refers to scale of organization and it is probably true that there is in practice a limit to the productive efficiency of larger-scale organization.¹ But (as pointed out in Chapter I) this limit is less obvious when large-scale *operation* is in question, i.e. when a large quantity of one line of product is specialized in. Now the outstanding economy rationalization may effect is to arrange for large-scale operation on one line of product to be specialized in by each of a number of firms or plants, *all* these lines being then marketed by a large-scale joint selling organization. Contrast this orderly plan for any one industry with the present situation in the British Motor Car Industry where the majority of firms and plants attempt to produce the widest variety of models of different shapes, sizes and power, including sporting and racing models, with the greatest variety of gadgets and colours to suit all the whims of actual and possible customers. Of course motorists want a variety of models to choose from, but why should the industry not be so arranged that each factory specializes in one or a few models instead of duplicating the models of other works? There would still be plenty of variety in the aggregate output of the whole industry as displayed on the market, and at the same time each works could produce its particular model or models on a large scale. This is what has happened in America. Mr. Ford not only makes Fords, he also makes the more luxurious Lincoln cars and the humble tractor; but he makes them in different works, leaving his original plant at Highland Park, Detroit, to concentrate on Fords. Similarly the

¹ *Structure of Competitive Industry*, p. 82.

huge combination of factories known as General Motors makes a wide variety of models but generally speaking each is made at a separate plant and receives the full time, attention and thought of specialists. General Motors as a whole can offer the consumer all the variety of choice he requires while at the same time the individual plants combined with General Motors can concentrate each on one or a few models. Specialization and standardization in production ; combination in marketing is here the watchword.

The combination of the producers in any one market is likely to reduce costs to such an extent that public authorities, as in the case of the English Coal Mines Act of 1929, Part II, are now compelling private producers to combine, or at least giving them financial encouragement to do so. Short of this, public authorities may try to limit the number of competitors. The high margin between wholesale and retail prices is often due to the large number of shops which compete in selling the same line of goods and which succeed in obtaining only a very low turnover each. Since the expenses of retailing are chiefly fixed overheads (e.g. salaries) service below capacity means that a high price per unit sold must be charged to secure a normal profit. It has therefore been suggested that the number of shops retailing any one class of goods should be limited by forbidding unlicensed retailing and severely restricting the number of licences issued as is done already in the case of public houses.¹ But whatever the method of limiting competition, it is evident that the appeal to a public authority to check the inefficiency of numerous small-scale competitors devolves the further responsibility upon

¹ Braithwaite and Dobbs, *The Distribution of Consumable Goods*, pp. 266-8.

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that authority to see that the remaining firms or combinations of firms, especially if financially assisted at the taxpayer's expense, do not exploit the consumer.

There is no escaping the possibility that when one or more "people of the same trade meet together" either by compulsion or voluntarily for whatever purpose—scientific elimination of waste not excluded—the conversation may end, to continue the words of Adam Smith¹ "in a conspiracy against the public, or in some contrivance to raise prices". In that case, whatever savings in cost may have been obtained as a result of larger-scale operation without additional marketing expense, will accrue, not to the consumer or to the employee, but to the monopolist producer and employer. Prices will not necessarily be reduced or wages raised, but profits merely swelled. Consumers and employees, the great bulk of the citizens of a nation, have not unnaturally rebelled against this prospect and have put forward schemes of either controlling the actions of the private monopolist or of displacing him in favour of themselves. The consumer's co-operative movement arose as an attempt to cut the profit out of the price exacted by the private retailer who as a monopolist in any one shopping district was often considered to be exploiting consumers; while the less successful worker's co-operative association attempted to avoid the exploitation of the employee.

Schemes of public State control have taken actual shape first in laws regulating the forms in which accounts were presented, or the prices charged by monopolist firms (as in the case of railways and gas) or regulating the precise type of organization to be adopted (e.g. the so-called Trust Busting legislation

¹ *Wealth of Nations*, Book I, Chap. 10, Part II.

of America); and secondly have taken shape in monopolistic production for a price by the State itself.

At the present moment the majority of monopolized industries in England are thus 'nationalized' or 'municipalized'; and it is significant that it is precisely those industries where the consumers concerned include a high proportion of private capitalist firms that are the industries most strongly nationalized and shorn of any monopoly profit. The supply of currency, of electrical power, of market and harbour and postal facilities are instances in point. All these industries provide producers' goods or supply 'aid' to other industries, and the private controllers of these aided industries appear perfectly alive to the dangers of a privately controlled monopoly. How much further the nationalization of specific industries will spread depends partly on the progress of monopolization, which in turn depends largely on the efficiency of a scale of operation as large as the total market; and partly on the behaviour of the producer once he is a monopolist in his relations with the consumer. Limits to the spread of nationalization may however be set by the inefficiency in the internal relations of a nationalized organization, and the unsuitability of such organization to solve efficiently the industrial problems it has to tackle.

It is this question of the comparative efficiency of various types of internal organization that will be taken up in the next chapter.

CHAPTER IV

INVESTMENT, EMPLOYMENT AND MANAGEMENT RELATIONS

§ I. *The Relative Growth of Investment and Employment*

WITH the organized marketing policies described in Chapter III must come a development of the internal relations within the firm, if the full possibilities of efficient large-scale operation are to be realized and exploited. The economy of large-scale operation ultimately depends upon the full use of mechanical and human specialization. Once relations with the consumer are so organized that a large-scale of production is feasible, then the producer may invest in the special machinery, equipment, and plant adapted to the particular variety of product concentrated upon, and may proceed to employ separate specialist managers. The results of this investment in specialized machines upon the internal relations within a firm, particularly that of employment, will be considered in the next three sections, while the problems of relations and organization consequent upon specialization of management will be taken up in the concluding sections.

The facts show that investment in machinery and equipment has already proceeded far. Plants and firms have increased in the number of men employed, as shown in Chapter II; but they have increased still more in the capital invested in them.

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The growth of capital investment may be demonstrated statistically by a variety of indices, such as the economic value of capital as against wages, or the physical amount of horse-power used as against the number of wage-earners employed. For the United States of America, I have shown that while in 1879 the capital invested¹ was 2.94 times the annual cost of wages in manufacturing industries, in 1899 the ratio had risen to 4.23; and between the same years the ratio of horse-power to wage-earners rose from 1.25 to 1.99.² After 1900 the American Census of Manufactures on which these figures are based excludes establishments with products valued at less than \$500 and drops the calculation of capital invested; but comparing comparable figures it appears that between 1904 and 1914 the ratio of horse-power to number of wage-earners increased from 2.46 to 3.19. The same increase has continued in the post-war period when establishments with products valued at less than \$5,000 were excluded by the Census. Between 1923 and 1929 the ratio of horse-power to number of wage-earners increased from 3.76 to 4.86.

In the English cotton industry the horse-power per operative is said to have increased from .09 in 1833 to 2.16 in 1907³; certainly, for all industries summarized in the report of the 'Balfour' Committee on Industry and Trade,⁴ the horse-power per head of persons employed rose from 1.8 in 1907 to 3.3 in 1924.

¹ This includes working capital (e.g. Stocks) as well as fixed capital.

² *Economics of Fatigue and Unrest*, p. 26.

³ Dr. J. F. Crowley in the *Engineer*, Oct. 19, 1917.

⁴ *Further Factors in Industrial and Commercial Efficiency*, p. 51—figures based on the Census of Production.

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Particular industries vary of course enormously from these general averages. For America, taking any one year, we may use the ratio of the economic value of the capital invested compared to the number of wage-earners employed,¹ and class industries according as they show a ratio (I) well above the average of \$3,000 for all manufacturing industries, (II) about the average, (III) well below the average.

American experience (Industries given in Table II, 1909) :

I. Industries with a Capital per Wage-earner ABOVE Average (Capital per Person above \$3,100).

Chemical and Allied Products.

Blast Furnaces, Steel Works and Rolling Mills.

Flour Mills and Grist Mills.

Malt Liquor (i.e. Brewing).

II. Industries having about an Average Capital per person engaged (Capital per Person between \$2,200 and \$3,100).

Cotton.

Wool.

Printing and Publishing.

Foundry and Machine Shop Products (i.e. General Engineering).

Gas.

Electrical Machinery.

III. Industries with a Capital per Person engaged BELOW Average. (Capital per person below \$2,200.)

Men's Clothing.

Women's Clothing.

Boots and Shoes.

¹ An index which is of course unsatisfactory when comparing different years owing to instability in price-levels.

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Information for Great Britain is confined to one or two firms reporting to the 'Balfour' Committee on Industry and Trade in about twenty industries.¹ This information merely gives the comparative proportion in the post-war period of expenses on account of materials, wages and salaries, and 'other expenses' respectively.

'Other expenses' consist chiefly of capital overhead charges though they exclude interest on capital. They cover

"the cost of power, light, water and heating; depreciation and maintenance of buildings and plant, including wages and the necessary materials where maintenance work is carried out by the manufacturers' own staff; rates, property tax; State insurance and workmen's compensation; and all other charges not included in the heads Materials or Wages and Salaries."

These 'other expenses' may thus be compared with wages and salaries as a test of the importance of equipment overheads.

British experience :

I. Industries where the 'other expenses' of the majority of individual undertakings reporting are greater than or equal to wages and salaries.

Chemicals.

Pig Iron, Steel Ingots and Billets.

Coke Making.

II. Industries where the 'other expenses' of the majority of individual undertakings reporting are less than, but not less than one third of, wages and salaries.

Gas.

Electrical Engineering.

¹ *Further Factors in Industrial and Commercial Efficiency*, Chapter II.

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Cotton-Spinning (American and Egyptian).
Semi-Finished Steel Products.

III. Industries where the 'other expenses' of the majority of individual undertakings reporting are less than one third of wages and salaries.

Coal Mining.

Ship Building.

Hosiery.

Clothing.

Boots and Shoes.

Cotton Weaving.

The similarity of the classification in the case of British and American industries is remarkable ; and on the whole the American experience shows that the industries which, as seen in Chapter I, are organized on a large scale, are also those with a comparatively high capital per wage-earner. Neither this ratio, nor that of 'other expenses' to wages and salaries used in the case of England, measures the precise nature of the investment that has grown so rapidly, but it is an indication of the trend of events. There appears to be a growing type of industry where the representative plant is comparatively large and has a relatively large fixed investment of equipment *specialized to a specific purpose*. This specialized equipment is made possible by large-scale operations on standard products and is part of the reason for the efficiency and low cost of such operations. If industry is taken in its widest sense, the largest fixed investment represented by specialized equipment is probably to be found in the railway industry and in public utilities such as the provision of telephones, water and electricity. Next in order of fixed and specialized investment come the three classes of

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manufacturing industry distinguished above. It is only in agriculture, house-building, wholesale and retail distribution, commerce, banking, professions, and personal service that fixed and specialized investment is not yet of outstanding influence upon the internal organization of the modern firm and its employment and management relations.

§ 2. *The Inter-action of Investment and Employment*

The relation of employment between employer and employee is at first sight analogous to the relation of investment. It is true that in popular parlance the investor is the private individual man of property who buys with his savings the shares of industrial firms, and not the firm which turns his resources into equipment or working capital. But Mr. Keynes has now accustomed us to think of investment as the "act of the entrepreneur".¹ The firm buys equipment and material as it does labour and uses both as factors of production. Moreover, the means for purchasing both labour and equipment or material may be either the individual entrepreneur's own resources or the resources of the private investors. Just as the social relationship of employment only arises when a trader ceases to be purely a peasant proprietor or a master-craftsman working unaided and buys labour on the labour-market, so the social relationship of investment only arises when a trader ceases to rely entirely on his own financial resources and borrows from other persons.²

¹ *A Treatise on Money*, Vol. I, p. 172.

² Thus we look at investment from the business man's point of view, as does Mr. Keynes, but recognize that a social relationship only exists when there are other persons involved as lenders.

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Here, however, the analogy ends. While equipment and materials are bought outright and come permanently under the ownership of the firm, labour, except where slavery is practised, is merely hired temporarily for a wage. Labour is not an integral part of the industrial firm. It is hired after the organization of the firm and its supply is taken for granted as purchasable on the market like any commodity. Above all, labour can be dismissed at short notice. The Trade Union organizations that represent labour may bargain for higher wages, shorter hours of work and more congenial terms of employment, but they cannot bargain for the full employment of all their members, or indeed for any particular amount of employment. Thus the degree of unemployment is determined in the first instance by the employer, though of course the number he dismisses or engages depends ultimately on his anticipation of the comparative profit or loss involved. Labour may be dismissed and unemployment created either because the consumption and demand for products at a given price appears to be falling off—a prospect that will also check further investment; or because investment in some form is taking the place of employment. Modern investment in machines and other fixed plant is usually frankly labour-saving.

Investment and employment are thus often rival, antagonistic, policies. And the further problem is raised how far the direct effect of investment in reducing employment may not affect the market by depriving a certain number of men of the power of consumption. In its crude popular form this question can be answered by pointing to at least four additive or alternate consequences beyond that of the original displacement. (1) More men are em-

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ployed, and paid wages with which they can consume, in making the new machines and capital goods; (2) greater consumable profits are secured, otherwise the capitalist would have had no motive in introducing the machines; (3) costs and presumably prices are reduced by mechanization, thus liberating consuming power to buy more of the same goods or more of other goods and services; (4) since distribution though partly mechanizable is not so subject to mechanization as manufacture more men are employed (and paid consumable wages) the greater the amount of goods produced by machines.¹

Though the consequences of mechanization upon employment are not economically so serious or so lasting as is popularly envisaged, large doses or *quanta* of mechanization do nevertheless create obstacles in the way of a continuous orderly progress. The process of mechanization implies the dismissal of the displaced men, often at short notice; these men will certainly not immediately be able to find new jobs nor, if they are skilled men, may they ever find jobs carrying the original remuneration. A considerable time-lag must elapse before they can transfer into machine-making, distributive or other trades where employment is expanding, or even before they can take the place of persons in a similar occupation who have transferred on their own initiative. The attractives and conducives to mobility necessary for this transference will be discussed in Chapter VI, but without planning and foresight the process of mechanization will certainly involve a large amount of temporary unemployment which

¹ It is significant that in Great Britain between 1924 and 1929 while those employed in manufacturing increased only proportionately to population those employed in building, transport distribution and services increased from 3,549,000 to 4,148,000.

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will re-shuffle the original consuming power and dislocate markets.

Once investment in fixed capital is an accomplished fact, two further consequences upon employment and conditions of employment will supervene. First, those employed may find the work less muscularly fatiguing, perhaps, but probably more nervously exhausting, and secondly any subsequent falling off in demand may result in greater and more lasting depression and unemployment than would otherwise have occurred. The reason for this second consequence will be considered in the next section; but the implication of both consequences is an illogical situation. In prosperity some people, and in depression many people, are displaced by machines and have ample leisure but no economic means to enjoy that leisure; while the remainder subjected to the nervous racketing of the machines throughout their working hours have the economic means, but not the psycho-physiological reserves to enjoy or demand many forms of consumption during the limited leisure allowed them. This inability of the 'tired business man' to use his earnings is also likely, as will be shown in the next Chapter, to act as a deterrent to productive efficiency, since many wage-earners will not see the object of earning more than they can enjoyably spend.

Reduction of the hours of work of those employed and more equal distribution of employment generally, is thus indicated as the logical counterpart of the introduction of machines and the increasing output per man employed. Indeed this parallelism has been the historical fact since the drastic reduction of hours to 10 or 10½ per day in the era of the first effective factory acts of 1833-1848, right up to the general adoption of the 48-hour week in 1919. More

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recently the apparent logic of a reduction of hours parallel with the introduction of machinery has been reinforced by the co-existence of high unemployment with an increased productivity per employee. Physical output per head employed, increased in Great Britain to the order of 10 per cent between 1924 and 1929.¹ During the same period of comparative prosperity unemployment was not however materially reduced but remained at a figure about 10 per cent of all insured (i.e. employable) persons. Since the proportionate increase in output per head is about the same as the proportion of unemployed, the logical solution would seem quite simple to some reformers. If 10 per cent more is produced per head by the employed working a 48-hour week, and the unemployed form 10 per cent of all employables, then according to their view all that need be done is to reduce the hours of those employed by 10 per cent, i.e. to 43.2 per week and take on the unemployed for the same number of hours. Thus all will be employed for equal periods of time. In the past, 90 men out of a hundred employables worked a total of $90 \times 48 = 4,320$ hours per week, while 10 men were not working at all. Now a hundred men would work the same aggregate of 4,320 hours, all of them employed equally for 43.2 hours per week.

Unfortunately there are obstacles to this equal distribution of work. Passing over for the moment the need for experience, skill and intelligence which may not be equally distributed, and the difficulties of moving the suitable unemployed to the localities where work is taking place, there is the obstacle of production costs. If cost per unit of output rises as a result of the equal distribution of work, then

¹ C. G. Clark, *Economic Journal*, Sept. 1931.

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prices will rise, fewer units will be demanded, sales will fall off and a smaller aggregate of working hours will be required. Hence, the new dispensation will mean equality of work, but equal shares of a possibly far lower total.

But why should costs per unit rise when the same output is more equally distributed over a larger number of employees? The answer is that cost will rise (1) if those originally employed demand the same wage in spite of the fact that they work shorter hours; if, in short, labour is to be a fixed cost irrespective of output or work-time. But even if labour is paid the same piece-rate and wages are allowed to vary proportionately with output there will still be added investment costs. Investment costs will rise (2) because more equipment, buildings, and machines will be required for the additional men; with 10 per cent more persons employed, 10 per cent more equipment will be required to assist them. And investment costs will rise (3) because the additional men taken on will probably be less capable for the required work than those originally employed, otherwise they would probably not have been the men to be unemployed. It is important to realize that the productivity of individuals does vary considerably ¹ and even though they are only paid a wage equivalent to their output, they will to some extent be wasting the plant and machines invested in.

Against these factors making for increased cost per unit is one (4) making for decreased cost, and that is the probable lowered fatigue of men working

¹ See, for example, Florence, *Economics of Fatigue and Unrest*, Chap. VIII; Individual Variations in Efficiency, *Weltwirtschaftliches Archiv.*, Jan. 1924; and *Industrial Fatigue Research Board Report*, No. 17.

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shorter hours. The output of the 10 per cent less hours will not be 10 per cent less but perhaps only 5 per cent less.

Let us suppose that, workers agree to take the same wage per output as before, and that increase of labour cost (numbered 1 above) is thus avoided. Is it by any means possible to reduce unemployment and the fatigue of those employed without incurring the cost of additions and wastage of plant (2 and 3 above) ?

The solution appears to be the working of short multiple shifts. But before developing this plan in § 4 we must consider the case of the unemployment that results from the fixed costs of invested plant when demand falls during a depression.

§ 3. *Investment and Employment in Depression*

If demand for their products is falling, employers must meet the situation by (a) cutting down output in the hope of keeping up prices as much as possible, (b) cutting down costs and prices in the hope of keeping up output and sales as much as possible. In fact, employers usually adopt both policies partially. They will try to minimize their fall in profit (or their losses) by cutting down costs and prices to some extent, and to some extent they will cut down their output. What they must be careful about, therefore, is *not to reduce output by such methods that costs per unit will be increased.*

The methods of reducing output in the short period (i.e. when employers are confronted by an unexpected fall in demand at too short a notice to enable them to alter their organization and equipment) resolve themselves into two main types: (a) short time, i.e. reducing the hours worked per

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week of the original number of persons employed ; or (b) dismissal—reducing the number of persons employed.

The *policy of short time*, that, when reduction of output takes place, there shall be proportional reduction of hours of the full original number of workers, and not dismissal of some of them, appears the more logical ; but it must face certain difficulties. These may be divided into increased direct labour costs and increased overhead investment costs.

The labour costs of short time involve the following considerations :

(1) If the same total wage has to be paid, i.e. if this cost is fixed in spite of the smaller output obtained by the shorter hours, then short time will increase costs per unit of output.

(2) If workers in the same occupation vary in efficiency, then under a fixed time wage where every worker is paid the same, obviously the cost per unit of output can only be reduced by 'selecting' the more efficient workers for further employment, and not by continuing to employ them all.

(3) If wages are paid by time, the fear of being dismissed may act as the only incentive to work harder ; and the assurance of not being dismissed (thanks to short time) may lead to slack working.

In short, if wages per week are a fixed cost, set not by output but solely by the number of wage-earners employed, then short time, so far from reducing costs per unit, will so enormously increase them that we need not consider possible economies in costs under other heads.

But now suppose that wages are paid on the original piece-rate basis or allowed to vary propor-

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tionately with output in some other way. In this case wage-costs per unit will not increase with the short-time policy, nor, however, will they decrease. But there will be changes in 'overhead costs' now worth considering.

The increased investment in fixed specialized plant, machines and mechanical and chemical processes has been reflected in a disproportionate increase in fixed supplementary or overhead costs, compared with the prime cost of raw materials and of wages and labour costs that *vary with the output*. This implies that in modern organization there are more factors preventing costs being adjusted to lower output.

Certain costs are constant—'frozen'—over time regardless of output. Such are the costs of obsolescence and depreciation (though not wear and tear from actual work) of the specialized plant which once laid down for a specific purpose cannot without additional expense be adjusted to other uses.

Certain other costs may be *common* to a group of different processes. If the output of any one process has to be cut down or even cut out altogether, these common costs must continue in full strength, not because they cannot, physically speaking, be cut down, but because the full or nearly the full 'quantum' is required for the remainder of the processes. The clearest examples of such common costs are the heating, lighting, and ventilation of a room which must be heated and lit and ventilated *en bloc* as a unit throughout the scheduled hours of work, even though in some parts little or no output is being turned out. The administrative staff is another such cost. A complete foreman must continue to be employed even if his departmental output is halved. It is the old problem of indivisibility

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of economic units. You cannot have half a foreman, or half a heated room.

Both constant costs and common costs may be classed as fixed overhead costs and we may consider the consequences upon these overhead costs of the two rival employment policies for meeting a fall in demand: (a) employing the full working-force *short time* or (b) employing only part of the force full time, in short, the policy of dismissal.

(1) Both dismissals and short time will increase the costs per unit of output of all items that are 'constant'. Less output is made, without any consequent reduction in these costs.

(2) But short time may not increase some of the cost per unit of output (as dismissals will) on the items that are 'common'. (i) Heating, lighting, and power generation and transmission by shafting can be restricted to the precise shorter hours or fewer days when persons are employed in the plant; but they cannot be cut down in proportion to the restricted number of workers left after dismissal. Similarly, the foreman's salary may be cut down in proportion to the shorter hours per day or fewer days per week, but cannot be immediately cut down when he is supervising a smaller number of men full time. Furthermore, (ii) where shorter hours per day are worked and lighting and heating costs are different for different hours, the least costly can be selected. Thus, if fewer hours are worked per day in winter, the hours naturally lightest and warmest may be selected. Where fewer days are worked per week there will also be some reduction of cost on such overhead items as stoking, furnaces being completely banked down for the day.

(3) On the other hand the dismissal policy will reduce overhead costs where (i) the machines (or

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other equipment) that can be used for the same job vary in efficiency. Costs can be reduced by selecting only the more efficient machines. The dismissal policy will also reduce overhead common costs where parts of the plant can be closed, and all lighting, heating and possibly power-transmission dispensed with in that section—as well, possibly, as the supervisory staff. Wherever machinery is driven by separate motors, transmission costs are not of course 'common', but cease when the machines are not used.

On the whole it is probable that in most industries considerations under heads 1 and 3 are more important than under 2. This leads to the conclusion that both dismissals and short time increase fixed *overhead* costs per unit, but of the two, short-time increases them more than dismissals.

The only logical policy of short-time which in a highly mechanized industry would not increase the overhead costs of reduced output, and might even allow the same wage being paid, would be that of working multiple shifts concentrated on the more efficient equipment. If this could be done for a whole industry complete individual plants that were inefficient being temporarily closed down, great economies would be effected. But even short of this 'rationalization' of a whole industry, the shift system introduced into any plant will effect important savings in overhead cost. The argument for this plan may now be developed.

§ 4. *The Policy of Short Hours and Multiple Shifts*

If in some factories two shifts of six hours are worked six days in the week instead of one shift of eight hours, then unemployment can be eliminated

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if a sufficient proportion of the workers are on shifts. Thus, if the original aggregate cited above of 4,320 hours worked by 90 men on a 48-hour week is required, it can be obtained by keeping 60 men on the 48-hour week, and working the remaining 30 plus the 10 that would otherwise be unemployed,¹ on two 6-hour shifts.² For then there will be—

60	people	working	48	hours	each,	or	a	total	of	2,880	hours.
40	"	"	36	"	"	"	"	"	"	1,440	"
										4,320	
Grand total.										4,320	

As well as eliminating unemployment this arrangement will reduce the cost of additional equipment and that of fatigue. Of all the additional costs mentioned in § 2 as due to shorter hours, only the cost of taking on comparatively inefficient men remains. The cost of additional equipment is avoided, since part of the original equipment is worked twelve hours instead of eight; and fatigue will be reduced since a large proportion of men work only a 36-hour week instead of a 48-hour week, the output per hour probably rising accordingly. This however may appear to be an embarrassment.

The increase in output due to the lessened fatigue (and doubling of shifts) must find a sale, and whether that is possible depends in turn upon the cost and hence the price at which each unit of product can be sold. It is essential therefore that the shift-arrangement should so reduce costs per unit that the additional output can be sold.

¹ The number of men quoted should be taken purely as an index figure. The total of one hundred may stand for a thousand or a million or ten million.

² It is quite usual for men on double shift (e.g. in the engineering trades) to work shorter hours than those on the single shift.

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Suppose that among the hundred employables instanced above, the output per hour of the 60 that remain on the 48-hour week remains the same; that the output of the 10 originally unemployed and probably less efficient men, now on a 36-hour week, is no better per hour; but that the output of the 30 men changing from a 48-hour to a 36-hour week increases owing to less fatigue one-sixth *per hour*, i.e. that they produce in 36 hours a total not of $\frac{3}{4}$ of the original total but $\frac{4}{5}$ of it, giving them an equivalently greater hourly wage. And suppose for the sake of simplicity that originally one unit of output was made per man-hour. Then the original output of the 90 men was 4,320 units per week. But under the new arrangement the total output may be calculated as follows:—

60 men remaining on a 48-hour week will, as before,	
produce	2,880 units.
10 men originally unemployed, will produce on a	
36-hour week	360 „
30 men, changing from the 48-hour week to a 36-	
hour week will produce not 1,080 units but,	
owing to elimination of fatigue, 30×42 units =	<u>1,260 „</u>
The total units will thus be	<u><u>4,500</u></u>

Thus the rise in output will be from 4,320' to 4,500, an increase of $\frac{1}{4}$, and unless demand is very inelastic, the reduction of price possible by reason of saving in overhead costs should allow sale of the increased output.

The only sufferers will be the 30 men changing to the shorter week and producing a *slightly* less output. For their wages will fall—according to assumption—with their output. But the overhead saving may well be sufficient to allow of their compensation so that they and possibly those originally

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unemployed will receive the same weekly wage as the 48-hour workers. It all depends on the relative importance of the overhead costs that are reduced.

Attention should here be drawn to Lord Leverhulme's argument for working 6-hour shifts while paying the same weekly wage.¹ He assumes throughout his argument that with one 8-hour shift fixed overhead expenses are equal to the cost of direct wages varying with output, and illustrates the financial position under a one-shift system as follows²:

Aggregate Cost of Fixed Overhead	£1,000
Aggregate Cost of Wages	£1,000

Total Cost	£2,000
Units of Output produced	£1,000
Cost per Unit of Output	£2

Lord Leverhulme then shows that even if a reduction of hours by a quarter, e.g. from eight per day to six produce no increase of output per hour, the reduction in overhead cost per unit of output will yet be just enough to finance the added wage cost per unit. Thus, if two shifts each work only three-quarters of the hours of the original single shift, but the same wages are paid per man, the following financial position eventuates.

Aggregate Cost of Fixed Overhead	£1,000
Aggregate Cost of Wages of Two Shifts	£2,000

Total Cost	£3,000
Unit of Output Produced—1,000 × (2 × $\frac{3}{4}$) =	£1,500
Cost per Unit of Output	£2

¹ *The Six-Hour Day and Other Essays.*

² The data used by Lord Leverhulme are, of course, highly simplified. Many other items of cost, fixed and variable, enter into the account. See footnote, p. 112.

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But if shorter hours do, by reduction of fatigue, increase output per hour, then the working of shifts each shorter by a quarter than the single shift will actually decrease costs per unit. If we suppose shortening of hours by a quarter to produce a sixth more output *per hour* and thus to reduce total output per shift only to $\frac{3}{4} \times 1\frac{1}{8}$, i.e. to seven-eighths of the output of the long single shift,¹ then the following financial position is reached :

Aggregate Cost of Fixed Overhead	£1,000
Aggregate Cost of Wages of Two Shifts	£2,000

Total Cost	£3,000
Units of Output Produced— $1,000 \times (2 \times \frac{7}{8}) =$	£1,750
Cost per Unit of Output	£1.71

In some industries, particularly the manufacturing industries listed in Class III, on pages 94 and 96, the low fixed investment industries, such as agriculture, building and commerce, Lord Leverhulme's high estimate of fixed overhead costs is not yet realized. But certainly in transport and public utilities and in the manufacturing industries of Class I, and probably in those of Class II, his estimate of the relation of fixed investment costs to wages is not greatly exaggerated even if we take the wages cost to represent all prime costs varying in proportion to output. For in addition to obsolescence and depreciation of equipment by mere exposure there are also the fixed costs of interest and that part of the managing and selling personnel who cannot

¹ Lord Leverhulme assumes men to produce in six hours the same output as in eight. But my supposition appears to be nearer to the facts. See Florence, *Economics of Fatigue and Unrest*, Chap. VIII. Vernon, *Industrial Fatigue and Efficiency*, Chaps. II-IV.

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be dismissed in proportion to output.¹ In these industries, then, shorter hours and multiple shifts appear to be the employment policy appropriate to the relative increase of fixed investment. To some extent continuous shifts have already been introduced, notably in transport and the chemical and iron and steel industries, but the policy could be extended and will probably have to be extended if the growth of fixed investment in specialized equipment and large-scale operation is not to be impeded. In all Russian industries where expensive equipment has been installed under the Five Year Plan, double, if not treble, shifts have logically enough been adopted.

Objective evidence of the efficiency of double shifts, at least where women are concerned, is contained in the *Annual Report of the Chief Inspector of Factories for the Year 1931*. Under an Act of 1920 special orders must be obtained by employers wishing to work women two shifts and such orders are found in use in metal and engineering trades and in all classes of textile works, artificial silk, hosiery, paper mills, in the glass industry, in rubber works, and in foodstuffs generally. Among various other reasons such orders were granted "to enable firms to reduce overhead expenses by increasing the output of existing plant" or where "the factory is designed for permanent shift work either with a view to obtaining an economic output, to meet foreign competition, or on account of the continuous nature of the process. . . . To old-established firms suffering from shortage of room and plant who cannot expand because of the situation

¹ For a tabular analysis of costs into prime and variable or 'supplementary,' see Florence, *The Statistical Method*, Table XVII G.

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of the works and whose overhead charges may also be heavy because of the situation and construction of the works," the two-shift system is said to be "invaluable as it helps them to minimize the effect of these disadvantages".

The report proceeds to quote the views of employers.

"One occupier in the North told the Inspector 'that the adoption of the system made the difference between success and failure', while another wrote to the Inspector as follows:—

'We are now in our third year, having commenced Double Shifts on 26th September, 1929, and it is without doubt a great success. The number of employees has increased from 300 to about 580 with consequent increase in our wages bill. As we pay 48 hours' wages for 40 hours' work you will naturally appreciate that our cost of production per unit or per lb. is correspondingly increased; but from practical experience we find that this extra wage cost per unit is exactly balanced by the decreased over-all charge per unit, therefore the great advantage is that with the same plant we can manufacture a considerably greater number of units, in fact more than our Weaving Department can deal with, which in its turn is compelled to employ outside Commission Weavers, Menders and Finishers. You will therefore see the direct and indirect gain is somewhat considerable.'

The reasons for and against this system from the employers' point of view has been well summarized in the report from the Central Metropolitan Division, and is as follows:—

"Employers favour the two-shift system mainly for the following reasons: (1) it effects a reduction in overhead charges, because buildings and machinery are used for longer periods daily; (2) orders can be more readily completed, a very important point especially in connection with shipping orders; (3) stocks can be readily maintained, but such heavy stocks need not be carried

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in view of increased rate of production ; (4) whereas ordinary overtime working is expensive, both on account of the higher rates of wages and the decreased rate of production due to fatigue of the workers, urgent orders can be dealt with by the two-shift system without these extra charges ; (5) when undertaking the manufacture of new classes of goods a smaller capital outlay on machinery and plant is required before production is started, and also before the demand for the particular goods can be known or estimated ; (6) the system is employed in other countries and is necessary in this country in order to be able to make goods at competitive prices."

Objections to multiple shifts have come largely from the side of labour and will be taken up in Chapter VI. Some employers also see objections in the "bad" time-keeping by the workers on the morning shifts"¹ and the difficulty of unified, co-ordinated supervision of more than one shift—"the difficulty in providing adequate supervision for both shifts without practically duplicating the managerial posts".² But on the whole these reasonings constitute the inevitable 'boggling' of a traditional conservative attitude in those mentally unable to adjust themselves to the necessities of reduced cost and increased efficiency under modern technique. The logic of large-scale operation requires a logic in employment relations that will adapt itself to the exigencies of fixed specialized investment.

§ 5. *Adaptation to the Growth of Specialized Management*

A social relationship of employment and investment between different persons arose when the trader, originally working with his own hands and

¹ *Report of Inspector of Factories, 1931, p. 57.*

² *loc. cit.*

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order to direct the policy and organization of the unit. The latter becomes too unwieldy for effective control."

E. A. G. Robinson¹ also sees in the 'factor of Management' a definite limit to the scale upon which firms can be organized.

"There must come a point at which the machine is too unwieldy to be managed, a point at which the gains of increasing size are so negligible that the still increasing costs of co-ordination are likely to exceed them. In this the managerial optimum differs from the technical optimum. The latter affords only a minimum scale below which the greatest efficiency cannot be achieved. Additional output may be produced under conditions of approximately constant cost. But if the managerial optimum is exceeded, costs through declining efficiency and the need for additional co-ordination, begin to rise. The managerial optimum sets, therefore, not only a lower limit, but also an upper limit to the scale of operations."

This view of the economists neglects the distinction between large-scale organization and operation. The limit to single management is obviously reached much sooner when a variety of goods are made, each on a small scale, than when one article is specialized upon. Apart from economists, however, those who have made a special study of organization come to the conclusion that no limit is set to the size of organization if correct principles are adopted to enable the single leader to delegate control.

"The vastest organization that the human mind can conceive will not be too vast for efficient one man leadership if the (hierarchical) and functional principles are correctly applied." There are real principles of organization that impose no limits to the magnitude of an organization. "Without these principles, all operations of any magnitude would be

¹ *Structure of Competitive Industry*, p. 48.

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absolutely dependent for their creation and permanence on an administrative genius of corresponding magnitude, and could not hope long to survive the removal of such genius."¹

Undoubtedly there are a few men who would be competent to head industrial organizations of almost any size, but if we believe in the 'normal' distribution of inborn abilities, we may assume that such geniuses are rare, and that the average head of the business is not competent to manage unaided on a scale beyond a certain point. When the size of his firm is small, and all contacts with his subordinates are personal and 'face to face', then the principles of organization seem to have a way of applying themselves, but with growth in the scale of organization there must come a delegation of powers, so as to relieve the strain and responsibility of the man at the top. In fact, we find that with the growth in the size of organization, noted in Chapter I, has come still more rapid growth in the number of salaried officers that exist to help the manager in carrying out his duties. In England and Wales, between 1907 and 1924, while the purely operative staff increased in numbers from 6,214,000 to 6,858,000, an increase of 10 per cent, the administrative, technical and clerical staff increased from 473,100 to 755,000, an increase of 60 per cent. A similar trend appears in the United States. While wage-earners in manufacturing industries increased between 1923 and 1929 from 8,778,000 to 8,808,000, only $\frac{1}{2}$ per cent, salaried officers increased from 1,269,000 to 1,378,000, an increase of 8 per cent.

It is clear, then, that an increase in the scale of organization is accompanied by the creation of more managers, sub-managers and office staff to assist the

¹ Mooney and Reiley, *Onward Industry*, p. 308.

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head of the business. In the final section of this chapter the functions will be considered that must be reserved for the ultimate controller of a business. Here and in the following sections the relations between specialized managers will be taken up that are appropriate to efficient large-scale operation. The economy of large-scale operation consists partly in the very fact that specialized managers can be used to their full capacity. The difficulty then presents itself of determining relations between these managers and sub-managers, so that their interests, authority, and work will not conflict.

As industry is conducted by fewer and larger organizations, questions of political science become more important relatively to questions of economics. In earlier times when a vast number of small firms were competing for the consumer's custom, and haggling and higgling one with another, the questions of price and the terms upon which they bought and sold were all-important; but now the area where exchanges are carried on is becoming restricted, and more and more of the transactions of industry are carried on inside the organization, without exchange for a price. Now relations of persons within an organization is precisely the subject of political science. It is true that hitherto political science has confined itself to questions of State, but as I have elsewhere pointed out and illustrated,¹ laws applicable to the State are also of importance in industrial, or indeed in any organization. There are laws relating to structure or morphology, that is, the size of the organization, the matter already dealt with in Chapter I; and there are laws relating to the 'physiological' relations of persons within the

¹ *The Statistical Method in Economics and Political Science*, Chaps. III, IV, XIX, XX.

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structure. These relations are briefly those of rule, sharing of work, and of appointing or 'manning'. All these relations are present in the industrial organization. There is the question of industrial control—who shall have the final word in determining the actions of managers and sub-managers; there are questions of division of work, how the various functions shall be split up between the managers and sub-managers; and finally there is the question of appointing and dismissing managers and sub-managers.

These relations can all be shown on what industrialists are coming to call their organization chart. This is a diagram that shows the respective duties (see Table VI, p. 135) of the individuals forming the corps of managers. Relations of rule and appointment are usually traced vertically, downwards; relations of work are traced laterally, and thus the whole system of relations within any one firm may be depicted as a whole.

§ 6. *Inefficiency of the Hierarchical System*

The system of organization which has grown up with the growth of most industrial firms may be called hierarchical, since its prototype may be found in Church organization. But this system is also known as the military system, since until recently it was the form of organization found pre-eminently in the army and navy. In all these systems the relation between rulers and ruled is more important than division of work. One or more persons are placed under a superior, that superior under a 'super-superior', and each of these superiors exercise a rule over their subordinates that extends to all types of work. There is, in fact, a regular chain

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of authority covering all subjects and extending all the way down the line. Thus, to take one example of Church organization, the Bishop of Birmingham has two archdeacons under his rule, the Archdeacon of Birmingham and the Archdeacon of Aston respectively. The Archdeacon of Birmingham has five rural deans and each of the rural deans in the Archdeaconry of Birmingham visits from fourteen to twenty-one beneficed clergy. We may say that there are a series of ranks extending up from the beneficed clergymen, through the rural deans and the archdeacons to the bishops; and above the bishops, of course, there are archbishops.¹

This administrative pyramid of ranks is still more familiar in the army, with its non-commission officers, lieutenants, captains, majors, colonels, and generals. And the same series of ranks are gradually growing up in industry. There are foremen, superintendents, assistant managers, managers, and general managers. It is true that these industrial ranks have not a distinctive official uniform, such as the military general's cocked hat or the Bishop's gaiters, though there are signs of such distinction in the bowler hat which the foreman is privileged to wear when walking about the works. Nevertheless, the differences in status are very great, and as the higher ranks withdraw themselves into their offices, important psychological results accrue as we shall see later.

There are certain principles proper to the hierarchical system which must be obeyed on pain of loss of efficiency and confusion in all rule and work relations.

1. Commands should only be given to subordinates through their immediate superior. There should be no skipping of links in the chain of command.

¹ Birmingham Diocesan Kalendar, 1930-1.

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2. Commands should only be received by subordinates from *one* immediate superior. There should, in short, be only one chain or line of authority, and a *unity* of command.

Unfortunately, these principles are only too often broken where industrial organization is arranged upon the hierarchical principle. The outstanding example of this occurs very frequently in companies of the family business type. A scion of the family, in virtue of his lineage, is often placed upon the board of directors at the top of the hierarchy, and also employed in an executive capacity as a sub-manager, or even as a sub-sub-manager. He appears at the top of the line of command and also half-way down. Thus his immediate superior in his executive duties who is purely a manager, not on the board of directors, is placed in a distinctly awkward position. On certain subjects he may be skipped out altogether, since the young scion may take his orders direct from the Board, and in other subjects he may find his orders to subordinates duplicated or even countermanded by the young scion. Subordinates of both these men may, in fact, be breaking the second principle by taking orders from two sources.

A third principle of the hierarchical system arises from the physiology of fatigue.

3. There is a limit to the number of subordinates that can be directly commanded by one man.

As General Sir Ian Hamilton¹ has declared: "The human brain cannot directly control more than five or six other brains." He cites an instance of a politician who jammed the whole work of one department at the Ministry of Munitions by appoint-

¹ Sir Ian Hamilton, *Soul and Body of an Army*.

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ing seventeen sub-chiefs with direct access to himself. Apparently there was a regular queue lining up at his doorstep to ask for orders and advice. In the army the universal practice has been in almost every country to arrange the commands so that four is usually the maximum number of direct subordinates, and more than five is very rare. Both on grounds of long experience and on grounds of national survival, it is likely that so universal a practice in the organization of the army, represents a well-founded conception.¹

Here again the organization of industrial firms has made the efficient application of the hierarchical principle difficult by overloading superiors. If a manager were commanding six sub-managers, and a seventh, or eighth, or ninth sub-manager were required, all these nine tend to be placed directly under the manager without much thought of the strain involved. Organizations have grown haphazard, one subject of command being added to another, bit by bit, and at no one point was it realized that a thorough reorganization was necessary all through the system. One experienced entrepreneur told me that he found it necessary to reorganize his entire system of management every time the size of his business multiplied by three, but the less thoughtful business chief is inclined to add superior co-ordinate and subordinate structures as opportunity offers without seeing the wood for the trees,— and to make a jungle of it. It is clear that if additions to the system of command involve, say, nine sub-managers under any one manager, a new rank should be inserted so that, say, four sub-

¹ Cited from a paper by Major L. Urwick, presented to Economic Section of the British Association for the Advancement of Science, Bristol, 1931.

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managers could be under one intermediate manager and five under another, and the two intermediate managers forming a new rank, could be placed under the original manager. Thus the number of ranks in the hierarchical system must be increased with the total size of the organization, just as in the army, given a definite number of men in the platoons, companies, battalions, brigades, etc., these men must be commanded by officers of a definite number of ranks. In Table VI a fairly typical organization is depicted in which a purely hierarchical system occurs under the command of the works manager, who is seen to control five foremen. Foremen usually control a varying number of men according to technical requirements, but if we suppose forty men to be an average number under one foreman, it follows that five foremen will control two hundred men, and four superintendents (under one works manager), each with five foremen, will control eight hundred men. Thus the employment of eight hundred men in the productive department implies three ranks, and if the number of men were doubled, a further rank would have to be added to avoid the overloading of any officer in the superior ranks.

It is only by adhering strictly to these three principles—the chain, and the unity of command, and the limit to subordinates—that the hierarchical system can efficiently control large-scale industrial operations, and industrial firms have been slow unfortunately in realizing this necessary condition of efficient large-scale operations. But there are sources of inefficiency *inherent* in the pure form of the hierarchical system, and however closely hierarchical principles may be adhered to, a limit will be placed to large-scale organization if reliance is placed solely upon a hierarchy of command. These

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inherent inefficiencies in the hierarchical system may be summed up under three headings:—

1. Failure to get correct information and to act upon it.
2. Red tape and bureaucracy.
3. Lack of specialized skill of experts.

1. While commands go down the line under the hierarchical system information is supposed to be coming up the line. Thus, while the sales manager gives orders to the travelling salesmen under his command, these salesmen in direct touch with retailers or customers, should be giving the sales manager information as to the difficulties in selling the various lines. But the main defect of the hierarchical system is that such information tends to be neglected for the very reason that it comes from a subordinate. The history of the actual conduct of military organization during times of war, is full of instances of neglect of information often vital. One of the most glaring examples was the neglect by the French Command of the warning that the first gas attack by the Germans was impending.

“ On April 13th, 1915, a German deserter gave himself up near Langemarck to the French 11th Division, then holding the sector, and related that ‘ tubes with asphyxiating gas (had been) placed in batteries of twenty tubes for every forty metres along the front ’. A crude respirator, issued as a safeguard to the attackers, was even found on him. The French Divisional commander, General Ferry, gravely impressed, warned the French Division on his left, the British 28th Division on his right, and the Canadian Division—which took over part of his front two days later while the Algerian Division took over the rest. More significant still, Ferry warned his Corps commander, Balfourier, and the liaison officer from Joffre’s headquarters, who came to visit him.

How did these two key-men react? Balfourier deemed Ferry a credulous fool and ignored his suggestions that

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the German trenches should be shelled in order to destroy the cylinders, and that the number of men in the front line, exposed to the gas danger, should be reduced. The liaison officer not only dismissed the story as a myth, but reproved Ferry, first, for warning the British direct, and, second, for taking steps to reduce the garrison of the front line contrary to Joffre's doctrine. And, following the usual happy custom of the French Army, Ferry was thereafter punished by removal for being right."¹

Further instances of indifference to information when supplied by a subordinate, occurred in the neglect of the Verdun defences. The French made a hasty assumption that fortresses were valueless.

"The original Governor, General Coutanceau, had not shared this view, but when, before a Parliamentary delegation, he dared to express his opinion, in contradiction to the Army Group commander, General Dubail, he was not only rebuked but dismissed. For some time, rumours had percolated through to Paris about the inadequate state of the Verdun defences, and in December Gallieni, as Minister of War, had written to Joffre asking for information and an assurance that they should be developed. Joffre's reply might well be framed and hung up in all the bureaux of officialdom the world over—to serve as the mummy at the feast. Rebutting the suggestions, he added: 'But since these apprehensions are founded on reports which allege defects in the state of the defences, I request you to . . . specify their authors. I cannot be a party to soldiers under my command bringing before the Government, by channels other than the hierarchic channel, complaints or protests concerning the execution of my orders. . . . It is calculated to disturb profoundly the spirit of discipline in the Army.'"²

2. Red tape and bureaucracy are words often flung in the teeth of hierarchical organization but seldom actually defined. When these words are

¹ Liddell Hart, *The Real War*, p. 194.

² *op. cit.*, p. 236.

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used they seem to refer to such a rigid adherence to formalities that rules become masters rather than servants. The result is an exceedingly roundabout method of reaching decisions, and a certain imperviousness to changing circumstance and technique. That decisions can only be reached by long-drawn-out correspondence and negotiation, clearly follows from the very principles of hierarchical organization. Thus, in Table VI if foreman A under superintendent I wishes to consult with a foreman under superintendent IV, he would have to ask permission first of superintendent I. This superintendent would have to approach the works manager, and not till then could the works manager give orders to superintendent IV to order the foreman under his command to meet foreman A. This procedure is found to occur in practice all over the world and in all walks of life where the hierarchical principle flourishes unmitigated. But there is a further source of inefficiency in a bureaucracy, in that it does not react appropriately to changing circumstances and technique. Here again many examples are to be drawn from actual experience of the conduct of the military machine in times of war, for instance the slowness with which the British authorities accepted the tank as a possible weapon and the misuse of the tank when finally adopted. Luckily for the Allies, the German military machine was equally impervious to new developments, and had as little faith at the outset in the new weapon of gas as the British army authorities had in tanks. They refused to allow the inventor of the gas attack to use shells, and he had to rely on the discharge of gas from cylinders, which depended on a favourable wind. Thus the inefficiency of the French in spurning the information of subordinates about the impending gas attack, was

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matched by that of the German Command in reducing the effectiveness of that attack.

3. The lack of specialized skill is inherent in the leading characteristic of the hierarchical system, namely, that each executive is responsible for all subjects in his department; thus, the head of a factory department would buy his own material, design his own products, engage his own labour, keep his own records, and set his own standard of output and costs; while the foreman in any one shop might set the wage rate, train new men, supervise the quality of the work, keep the plant running, and determine the speed and feed of the machines. In short, each commander is inclined to be a Jack-of-all-trades and master of none.

§ 7. *Inefficiency of the Functional System*

It was because of the failure of the old hierarchical system in producing specialists and experts that a new system of organizing industry stressing work rather than rule relations was consciously advocated by such men as Frederick Taylor, the founder of scientific management. The leading characteristic of this system is that specific functions common to all or several departments are each placed in the hands of a man specifically qualified, and instead of giving attention to all the factors in one department, he gives attention to one factor in all departments.

Taylor began his attack at the bottom rank of the industrial hierarchy, that of the foreman. He advocated the creation of functional foremen, each of whom should look after a different factor in the workshop.

‘Under functional management, the old-fashioned single foreman is superseded by eight different men, each one of whom has his own special duties, and these men,

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acting as the agents for the planning department, are the expert teachers, who are at all times in the shop, helping and directing the workmen. Being each one chosen for his knowledge and personal skill in his specialty, they are able not only to tell the workman what he should do, but in case of necessity they do the work themselves in the presence of the workman, so as to show him not only the best but also the quickest methods.

One of these teachers (called the inspector) sees to it that he understands the drawings and instructions for doing the work. He teaches him how to do work of the right quality; how to make it fine and exact where it should be fine, and rough and quick where accuracy is not required,—the one being just as important for success as the other. The second teacher (the gang boss) shows him how to set up the job in his machine, and teaches him to make all of his personal motions in the quickest and best way. The third (the speed boss) sees that the machine is run at the best speed and that the proper tool is used in the particular way which will enable the machine to finish its product in the shortest possible time. In addition to the assistance given by these teachers, the workman receives orders and help from four other men; from the 'repair boss' as to the adjustment, cleanliness, and general care of his machine, belting, etc.; from the 'time clerk', as to everything relating to his pay and to proper written reports and returns; from the 'route clerk', as to the order in which he does his work and as to the movement of the work from one part of the shop to another; and, in case a workman gets into any trouble with any of his various bosses, the 'disciplinarian' interviews him." ¹

But while Taylor was consciously reorganizing the lower ranks of the industrial hierarchy, the upper ranks were being functionalized by sheer force of circumstances. Practically every firm in England and America that employs, shall we say, more than one hundred men, will have the functions of management split into at least three divisions. There will

¹ F. W. Taylor, *Principles of Scientific Management*, pp. 124-5.

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be a works manager to control actual production ; a sales manager to distribute the products ; and a third official of equal rank, known in England usually as the secretary, whose work will consist in organizing the accounts, in controlling finance, and sometimes purchasing raw materials. These three specialized managers under the control of the general managing director, are shown in Table VI together with a fourth specialized manager, who is quite frequently found even in small manufacturing firms, namely, the labour or personnel manager. One or two other functional managers are also sometimes found in the top rank, such as designs manager, or manager of research, but the precise details need not occupy us. All that need be noticed is that under the new functional system, the labour of management is divided in each rank so that there is not merely a system of superiors and subordinates, but a series of posts of co-ordinate authority and differentiated functions. These functions may be different in respect of type of work performed, or merely in respect of territory covered, as in the case of travellers under the sales manager.

The functional system has principles regulating its efficient application no less than the hierarchical system.

1. The functions into which the work is split up, should be collectively exhaustive ; that is to say, there should be no gaps where no one is told off to function.
2. The divisions of the work should be mutually exclusive ; that is to say, there should be no over-lapping and duplication of work.
3. Each division should contain related subjects. The work required of each division should be fairly similar so that the differences in the work within each division should be less than the differences in the work of different divisions.

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Now functional systems have grown up haphazard, just as hierarchical systems have done, and we find many an industrial firm with a functional system that violates these principles, and thus leads to obstacles in the efficient carrying out of large-scale operations. The best documented instance of such mal-assignment of functions has been given in great detail by Major Urwick.¹ The organization concerned was a well-known British firm, by no means unusually inefficient, and, in fact, probably above the average in efficiency. Yet such glaring examples occur of the violation of the principles of organization both hierarchical and functional given above, that some of the details are worth stating.

First of all it was found that the line of command was uncertain.

“Quite a number of executive officers in the concern had not the least idea to whom they were responsible. The reason was in itself plausible. In the course of many emergency appointments, personal difficulties had arisen. Mr. A. was quite willing to act as Mr. B.'s assistant, and, indeed, to accept all his instructions from Mr. B. But he would not on any odds admit that he was officially 'under' Mr. B.

In dealing with these difficulties, the Directors had tried to avoid using the big stick. In many cases, recalcitrant Mr. A.'s had been allowed to continue to report to a Director in theory, though in practice they were really responsible to somebody else. On the other hand, where it had been necessary to increase the responsibility of some members of the staff—the Mr. B.'s—they had never been granted officially the authority to discharge those responsibilities. They had been told to get along with the Mr. A.'s.”²

¹ *Re-organizing an Existing Business*, Fourth International Scientific Management Congress, Paris, 1929.

² *op. cit.*

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In the second place the third functional principle given above was sadly violated. The Chairman and six directors were employed full time as executive managers, but most of them exercised authority over the most diverse functions. Three directors appeared to be mainly in charge of production. But one of these in charge of 'box mills' managed men's and women's employment, wages, cost and pensions, staff office, buildings and estates and the laboratory; another in charge of three types of actual product also managed the time office and the fire brigade; and the third in charge of a fourth actual product also managed the canteen. A fourth director appeared to be mainly in charge of finance, but also purchased stationery and fancy boxes, and took charge of planning, transport, stores and packing, statistics and costing, as well as the production of three further types of product. A fifth director appeared mainly in charge of purchasing but also managed the technical library. A sixth director appeared mainly in charge of equipment but also interested himself in research groups. It was in fact only the seventh director, in charge of sales, who definitely confined his attention to one function and managed travellers' sales and advertising and nothing irrelevant to these matters.

Let us suppose, however, that the functional system is efficiently and logically carried out and that there are no violations of its principles. Is it possible to say that in such a case industrial firms would be organized for successful performance of large-scale operations? Undoubtedly many firms, particularly in America, have moulded their organization upon this system but yet they have often found in the functional plan a series of additional

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inefficiencies. In the first place, much that was efficient in the hierarchical system has been swept away. The functional foreman idea clearly contravenes the law of unity of command. The operative takes orders not from one foreman, but from eight, whose orders might well conflict, and Taylor's plan is soon found to be unworkable.¹ It is clear that if decisive action is to be taken at least a backbone of authority must be left. The line of command cannot be entirely abandoned, and there must be some superior to whom every man in an executive or operative capacity can look for definite orders. In the second place, with division of functions has come a certain loss in co-ordination. Apart from the friction, jealousy, and rancour that are apt to spring up between departments, there is an inevitable getting out of touch.² This is particularly clear in the division between sales managers and works managers. Orders are booked by salesmen that can only be produced at great cost and with little or no profit, while conversely, articles may be produced that can only be sold at a loss or not at all. Under a purely hierarchical system, where the head of the business attends to both selling and producing, he will produce with a definite knowledge of the possibility of the market, and he will market with a definite knowledge of the possibilities of production. But a division of function, where two different men are doing the selling and the making, either results in disorganizations, or entails the creation of a further job, that of co-ordination or liaison. In the former case there is additional inefficiency, in the latter additional expense.

¹ H. Fayol, *L'Administration Industrielle et Générale*; C. Myers, *Business Rationalization*, pp. 36-42.

² Myers, *op. cit.*, pp. 42-4.

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§ 8. *Management by the Line and Staff System*

There has been a gradual trend from the hierarchical or military line system of delegation, to a functional system of division of labour in management. Both systems, however, have been faultily applied, or when logically applied have been found to possess inherent sources of inefficiency. The hierarchical system concentrates control too much; the functional system divides control too much for effective large-scale operation. A system must thus be found which will strike an efficient balance in the division and concentration of work and control. Such balance applied in industry is probably nearest approached by the line and staff system.

The conception of a staff first arises in the army as a result of the need for information. We have already seen how information, if it comes from the lower ranks, is inclined to be neglected. To remedy this source of inefficiency military commanders gradually delegated power to certain persons to specialize in giving information. Thus, the quartermaster was to find places for an army on the march to camp or 'quarter' in. Information had to be collected and co-ordinated and inferences drawn from it in the form of recommendations. In addition to informing the commanding officer, these specialists would thus also tender advice. Gradually the advisory function of the staff was developed, so that its advice was expected to be acted upon, and plans were prepared to facilitate the necessary action. Thus, Mooney and Reiley¹ point to information, advice, and facilitation as the three purposes of a staff system. The staff works out plans for various contingencies upon information acquired, and devises

¹ *Onward Industry*, Chap. 23.

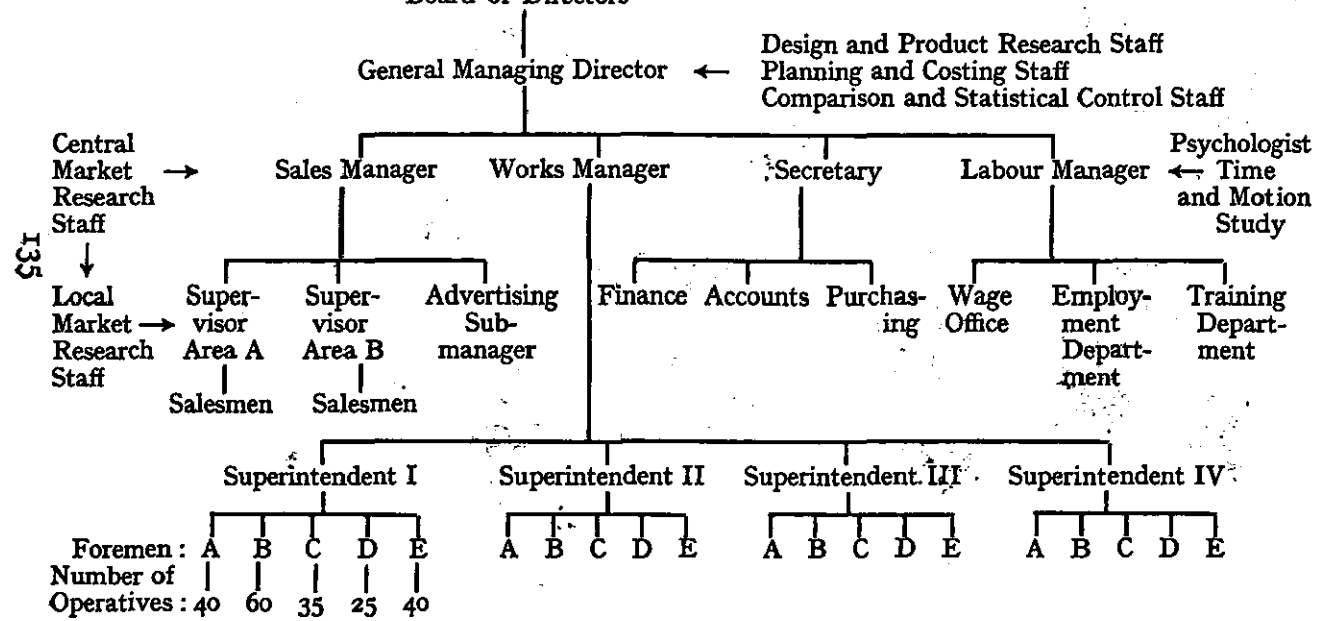
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the detailed methods of carrying out these plans. In short, though the staff forms no part of the system of command, it influences executive officers within that system at various points. This system is shown in Table VI by means of arrows, converging from the margins. Thus the general managing director has a staff that advises him as to the design of product, and the methods of producing it, by undertaking research, planning, costing and statistical control (i.e. comparison of the actual achievement as against the plan). Again in the second rank, the sales manager is advised as to advertising methods or price and output policy by a staff specializing in market research and the labour manager may be advised as to the selection of labour by a psychologist, and as to wage-rates by a time and motion expert. In the third rank there may be a staff for market research attached to each area supervisor and this area staff may be advised by the central market research staff. It is to be noticed that none of these staff officers are part of the hierarchical backbone formed by the managing director and his subordinates and foremen, nor part of the functional division of powers seen in the division between sales, works, and labour managers. They are specialists in thinking, planning and control of results, and do not give orders but merely advice.

The practical difficulty of grafting such a system on a purely hierarchical or military order, can be realized from a passage in which Mr. Winston Churchill describes his efforts to introduce a staff on the army pattern into the British Navy early in 1914.

“ The dead weight of professional opinion was adverse. They had got on well enough with it before. They did not want a special class of officer professing to be more brainy than the rest. Sea-time should be the main quali-

TABLE VI
LINE AND STAFF SYSTEM—SAMPLE ORGANIZATION CHART
Board of Directors



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fication, and next to that technical aptitudes. Thus when I went to the Admiralty I found that there was no moment in the career and training of a naval officer when he was obliged to read a single book about naval war, or pass even the most rudimentary examination in naval history. The Royal Navy had made no important contribution to Naval literature. The standard work on Sea Power was written by an American Admiral.¹ The best accounts of British sea fighting and naval strategy were compiled by an English Civilian.² 'The Silent Service' was not mute because it was absorbed in thought and study, but because it was weighted down by its daily routine and by its ever-complicating and diversifying technique."³

But in spite of difficulties there is no question that the chief source of inefficiency in the actual military system has been corrected by the addition of staff officers. Information actually collected and co-ordinated can no longer be spurned, staff officers will be more open to outside changes of thought on technical inventions, and above all they will be men of specialized skill, experts in the full sense of the word.

The staff system corrects the inefficiency of the pure line organization; it may also correct the lack of co-ordination and the violation of unity of command implied in the functional system. Knowledge will be divided up among several persons, but supplied by the staff to one central authority, and this central authority will have unity of command. Additional co-ordination may, however, be obtained either by giving the staff occasional experience of executive line work or by a system of committees, where the staff advisers may meet all the functional managers whose activities need correlation.

¹ Admiral Malan.

² Sir Julian Corbett.

³ Churchill, *The World Crisis* (Abridged), pp. 74-5.

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There is always a tendency inherent in the staff system for the creation of a superior highbrow set who are pictured as sitting at headquarters devising paper forms and questionnaires to annoy the executive line officers and men doing the ' donkey work ' at the real front. In the analogous situation in the last war, we can still remember, even if we cannot print, what the infantry officer in the trenches thought of the ' red-tabs ' he saw at the base. All large-scale organization out-distances man's unaided memory and involves paper-work, even if it is only written orders going down or reports coming up along pre-arranged lines of communication, or the booking of orders, the registration of decisions, the keeping of accounts and recording of action taken. But the system of records is greatly extended by staff planning. Planning of output, of processes, of routes, of budgets, etc., involves plans, and plans must for communication to executives be put down on paper in the form of drawings, graphs, diagrams and statistics. Control of the degree of actual achievement of plans also involves paper-work, such as cost-accounting and statistics of percentage efficiency ; in fact, the phrase ' statistical control ' is often used to indicate this checking up of actuality against some standard which is such an important phase of staff work.

Wherever the pure line system of command is abandoned and co-ordinate offices are created either for functional or advisory paper-work purposes, it is essential to efficiency that a common meeting-ground be found for ideas and complaints. This meeting-ground is obtained in committees, where the functional executives on the same level of authority (e.g. sales, design and production managers) can co-ordinate their policies, or the advisory staff and the executive

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functionaries may get together as 'a body of persons' to discuss plans and the difficulties of their execution and achievement. Under the staff and line system committees are particularly important. By this device thought and action may be harmonized, opinion and experiences pooled, predilections and complexes ironed out and what Mooney and Reiley have called a common 'indoctrination' achieved. The executive gets to understand and feels itself identified with the staff plans and the staff gets to understand and feels itself identified with the work of the executive.

Committees in an industrial firm as everywhere else raise of course new possibilities of inefficiency. Where two or more persons have to be gathered together time will be lost by the mere need of gathering them and, when gathered, by the slow progress of deliberation and arriving at a decision. And when the number of persons on the committee are more than a certain modicum, not only are a great aggregate of man-hours lost to productive work but the actual efficiency of the deliberation may suffer through too many 'cooks spoiling the broth', and through the need for greater tact and secrecy. In fact, though a certain number of persons are usually required on a committee to ensure all sides to a problem being heard (otherwise there is no point in the committee) a law of optimum size of committees may be advanced that *there is some modicum number of members of a committee, above which efficiency is lost.*

The staff and line system coupled with co-ordinating committees is probably that best adapted for the efficient large-scale production of a few articles within one firm, i.e. large-scale operation. If with lateral or vertical integration many processes are

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performed or many products made each on a small scale, many separate departments must be created each with an executive officer in charge and the organization logically tends to the hierarchical or functional pattern. But with concentration upon a few processes or products departments may logically be fewer while staff services can be extended. It will pay, if there are only a few processes or products each on a large scale, to do more specialized thinking on the specific problems of each, and to discuss in committee the closely related work of those thinking and acting upon a single process or product.

It is doubtful whether actual industrial practice has fully adapted management organization to the technical requirement of large-scale operation. The full economies of large-scale operation have not been realized owing to a slackness in changing over from a hierarchical or functional system to a line and staff system. This has led to inefficiency where the technique of large-scale operation has already been introduced and has prevented its introduction where conditions would otherwise have been favourable. The vicious circle thus reappears. The large-scale operation to be logically expected from its economy is neglected for lack of a staff and line organization; the possibilities of the staff and line system neglected for lack of the large-scale operation to which it is politically suited.

§ 9. *The Core of Ultimate Control*

The new problems in employment relations and organization of management that arise as a result of the increase in specialized fixed capital and

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specialized management have now been considered. Industrial organization has on the whole been slow in adapting itself to the new technical conditions and has thus not made full use of the possible economies of large-scale operation.

But these new problems in employment and investment, and in management relations can no longer be considered in isolation. They involve a further problem in the co-ordinating of these relations. The entrepreneur of classical capitalism was investor, employer, and manager rolled into one; under modern capitalism, nationalization, or co-operative organization the investor, employer and manager are usually different people and thus arises the super-problem of co-ordinating for ultimate control in industry.

For management, as we have used the word in §§ 5-8, does not imply ultimate control. We accept the definition of Sheldon ¹ that management merely *executes the policy determined by administration* and thus use the word administration as the more ultimate activity. Administration may be said to determine general policy as to amount and sorts of product, prices, and investment, and the higher strategy, e.g. attitude to competitors, but does not involve continuous activity. Management which is in continuous session confines itself to the subsidiary strategy, tactics, and mere supervision and discipline. The distinction is one of degree—higher control as against lower control—but wherever the line may be drawn management is subordinate, administration superior in a rule relation. Management corresponds in State government to the work of subordinate civil servants, administration to that of the legislature, president or cabinet, consisting of so-called

¹ *The Philosophy of Management*, Chap. II.

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'Statesmen'.¹ Besides the different positions in the rule relation there is a further distinction between management and the ultimate control in a social relation hitherto only mentioned² and not discussed, namely that of appointment or manning. A sign of ultimate control is the activity of appointing and dismissing. He who appoints and dismisses is in control of him who is appointed and dismissed.

This function of 'manning' the organization is by no means just a paper right that has no practical influence upon the efficient control of industry. Employment, the hiring and firing of labour, consists essentially in this very activity of appointment and dismissal. From this lowest rank of control upwards the vesting of the right of appointment is all important. As Professor Knight puts it³

"in organized activity the crucial decision is the selection of men to make decisions. . . . The exact movement he (the machine tender) shall have to perform cannot be foretold, but his ability to perform them can be. . . . The official who assigns the operative to his job . . . must exercise a rather higher quality of judgment in estimating the powers of the operative. The net effect is that uncertainty and responsibility are not quite eliminated, but are partially transferred to the superior in the scale of organization. . . . The foreman who passes judgment on the abilities of operatives and takes the responsibility for their performing in accordance with his expectations finds himself in turn in a similar relation to his own ranking superior in the organization. . . . His responsibility is in turn transferred to the higher official (superintendent or what-not) who selects him, assigns him to his work, and hears appeals in those still rarer

¹ The analogy may be carried further into various forms of administration. Administration by a board of directors or by a cabinet are both examples of committee rule.

² p. 119.

³ *Risk, Uncertainty and Profit*, pp. 294-7.

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questions which he refers higher up for decision. . . . On up the scale the same relations hold good until we come to the supreme head of the business."

Yet a third character of ultimate control beside the higher ruling power and the appointing power, appears in the activity of organizing. This activity is distinct from that of management, as starting an organization is distinct from running it; and is distinct from that of appointing in that it is a creation of structures or posts (functions, ranks, etc.) rather than the manning of those structures or posts. The word organization is often used to include both organizing *proper* and appointing (as in the definition being standardized by the International Management Institute),¹ but the activity or power of organizing *proper*, is normally more exclusively reserved for the ultimate control, than that of appointment.

The activity of organizing proper is the creation of a structure. But since the industrial structure consists of a series of super-structures, co-structures and sub-structures, organizing must also occur at different levels of rank. There is super-organizing, co-organizing and sub-organizing. Super-organization creates the first-rank posts, probably the second-

¹ *Report on Administration and Management of Business Combination*, International Management Institute. "Organization is the process of assigning duties, authority and responsibility. It may thus be defined as 'determining the scope and limit of activity of each individual, or groups of individuals, in business or industrial undertakings, together with their relations and connections with one another'. Thus, while administration and management are two parts of the total process of operating an enterprise, organization is a separate activity forming part both of administration and management, but in turn determining the general lines on which these activities are conducted." See also Mooney and Reilly, *Onward Industry*, p. 488.

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rank and possibly the third-rank posts, but it may only man the first-rank posts and possibly the second-rank posts, leaving the manning of the third-rank posts to the first-rank men. Thus in Table VI the general managing director would arrange the scope of the work, the department, of each superintendent and foreman; but while appointing the superintendent himself might leave the appointment of the foreman to the works manager.

An extremely important principle thus arises in the reservation of ultimate control by the supreme authority, a principle applying, probably, in all efficient forms of organization, political as well as industrial. It may be worded as follows:

While management is a relation between *immediate* superiors and subordinates, appointment of subordinates may be reserved to super-superiors and organization to super-super-superiors.

Thus in Table VI the actual operatives are given orders and managed by their immediate superior the foreman, but they are usually appointed and dismissable only by their super-superior the immediate superior of the foreman, i.e. the superintendent acting 'over the head' of the foreman. And when it is a question of organizing a foreman's department in the sense of creating so many sub-divisions, so many posts of time clerks, inspectors, tool-setters and operatives then it is the super-superior, the works manager, to whom that power is usually reserved.

If efficient co-ordination of employment, investment and management is to result, the ultimate powers of administration, organization and appointment must be concentrated on certain persons. These final authorities will be very different in the three main systems of organizing production dis-

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cussed in Chapter III—the capitalist system, the consumers' co-operative system and nationalization.

In the last hundred years *the capitalist* system of control has been undergoing a profound change dictated by that very enlargement in the scale of organization indicated in Chapters I and II. This change and the reason for the change is evident from successive American Censuses of Manufactures.

As the average size of establishment has increased, measured in number of wage-earners employed, capital invested or output produced, so has the proportion of all wage-earners, capital or net output added by manufacture controlled by corporations (i.e. joint stock companies) as against partnerships or individual traders. And the average size of establishment measured in these terms under the control of corporations has always been larger than the size of establishment otherwise owned. In 1904, 23·7 per cent of all establishments but 70·6 per cent of all wage-earners and 71·9 per cent of net output were under the control of corporations. In 1914, 28·3 per cent of all establishments but 80·3 per cent of all wage-earners and 81·9 per cent of all net output were under the control of corporations.

Clearly the corporation or joint stock company is the dominant form of control and is gradually becoming still more dominating, particularly where large-scale organization is concerned. Nor does the recent tendency towards combines, especially in the form of holding companies, alter the situation. For the holding company which controls several corporations or joint stock companies by ownership of the majority of their voting stock is itself a corporation or joint stock company.

Now the old integration of investment, employment, and management in the person of the entre-

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preneur is still retained at least as a *core* in the newer forms of capitalist organization that are gradually developing to control large-scale operations.

In the joint stock company the relation of investment is linked to that of management by vesting the ultimate organizing and appointing power in the financiers and capitalists who take the risk of loss of profits. The super-organizer is the company promoter. He creates as many directorships and higher managerships as are implied by the broad outlines of his scheme of organization, and usually decides who shall initially be appointed as directors, leaving the appointment of the managers, i.e. the 'filling' of the managerships, to these directors. The relation of management is linked to employment by the power of the manager to appoint the lower ranks of industry. The board of directors, usually including the managing director and perhaps other working directors, are a committee constituting the cornerstone of the arch whose function it is to integrate the often conflicting interests of financiers, the various types of shareholders—Debenture, Preference, Ordinary—and the various executive managers and departments. In the German joint stock company this integrating function is more clearly brought out by separating an Aufsichtsrat, a Council of Control, from the Vorstand, a Managing Board. The Aufsichtsrat exercises supreme control over the management but consists entirely of representatives of the investment interests concerned.

The body of individual investors does not appear in practice to exercise much direct power. They do not perform the original organizing. Joint stock companies are brought into being and their constitution—the memorandum of association that defines the scope of their transactions and the articles of

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association that names the directors—is settled by company promoters. Once the organization is under way, reorganization such as a change in the number, distribution and denomination of shares must be approved by an extraordinary meeting of shareholders, and annually at the ordinary meeting shareholders have the right to elect directors in place of those whose terms of office expire. Votes are counted not by heads but in proportion to shares owned,¹ and debentures on which interest is legally assured—as also some classes of preference stock—carry no voting rights. Thus what Robertson² calls the 'Golden Rule', that control goes with risk, is in theory obeyed.

A large proportion of shares with voting rights may often be held by a small minority of shareholders. Analysing the distribution of shares in ten leading British companies with an average capitalization of some £15,000,000 Parkinson³ finds that 41 per cent of shareholders held less than 100 £1 shares each and 88 per cent held less than 500 £1 shares each⁴; and that in three of them investors holding 50,000 or more £1 shares each, held between them more than 30 per cent of the entire shares. The practical result of this unequal distribution of voting rights vested in the risk bearing stock, is that the ultimate control falls into the hands of a few actively-interested capitalists holding a sufficiently large proportion of the voting stock together with proxies from the passive stock-holders to offset the voting

¹ The late Marquis of Salisbury thought this an anti-democratic device worth copying in State Constitutions. See L. Woolf, *After the Deluge*, p. 211.

² *Control of Industry*, Chap. VII. ³ *Scientific Investment*.

⁴ In one of the companies the shares were of 6s. 8d. nominal value.

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power of active dissentients. They nominate new or the old directors and nominations are usually agreed to at the general meeting of shareholders.

Once elected the directors must walk warily for fear of offending these more active investors. Passivity is the normal attitude on the part of the majority of investors since they are either too ignorant, timid, gentlemanly or ladylike; too busy in their professional life or other economic activities; or else possess investments too much scattered among different companies or for too short a period in any one company to attend meetings intelligently. Of course, while normally 'sleeping', investors may be roused by what they consider any flagrant disregard of their interests and may proceed to dismiss the board and appoint a committee to take over instead,¹ but this is unusual. Further, in considering the ultimate control exercised by the owners of the capital over the policy of a capitalist firm, attention must not be confined to the private individuals technically known as the investors. Capital—working capital as well as fixed—may have been lent or invested in large blocks by such powerful organizations as banks or insurance companies and there is no question that they can and do control ultimate policy even to the extent of insisting on a representative of their special interests on the board of directors.

The interests of active shareholders are either maximum profit on sales of shares, or maximum dividends, if not immediately at least in the long run. Shares may rise or dividends increase either by reason of greater efficiency and lowered costs

¹ For a vivid description of the qualms and anxieties of a board of directors vis-à-vis a shareholders' meeting, see Galsworthy, *The White Monkey*.

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(including labour costs); or, particularly when a monopoly is established,¹ by reason of unnecessarily high prices. This latter possibility, as well as that of reduced wages, has led to actual and suggested schemes for non-capitalist control that would care more directly for the interests of consumers and wage-earners.

Under non-capitalist systems of control such as that of the co-operative movement or nationalization, the ultimate powers of policy, appointment and organization are deliberately divorced from the ownership of capital and vested in the consumers and the State. In the consumers' co-operative societies the members have each only one vote whatever the size of their capital holding; and the right of the consumer-members to appoint the executive committee which in turn appoints the manager gives the consumers ultimate control. In nationalized industry it is the electorate who in the last resort controls policy. They appoint the Parliament which appoints the Government which appoints the Minister who appoints the industrial managers. But the precise form of organization in which this new control of industry shall be clothed is, particularly in the case of nationalization, a problem pressing for solution by the political science of the future.

Several widely different forms of control of nationalized industry are actually in operation in England to-day and they differ in respect of their investment no less than their management relations.

Investors are normally paid a fixed rate of interest and are thus all relegated to the passive position of debenture holders in the capitalist company. Whatever profit or loss accrues as a positive or negative

¹ Chap. III, § 5.

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residue when costs are subtracted from total revenue goes to or is taken from the taxpayer or ratepayer, who thus takes the place of the ordinary shareholder in the capitalist company. Recent schemes such as that for the unification of London transport allow a rate of interest to certain classes of investors which varies (though only slightly) with revenue, but in no case are the investors as such allowed the ultimate control of management and their position is analogous to holders of preference stock without voting power in the capitalist company.

In their administrative and management relations, schemes of nationalization show the widest diversity. Three distinct systems of ultimate control can be distinguished.

A. Control by a department of State where the general manager is a civil servant (probably with poor salesmanship), and the supreme authority a minister liable to change with shifts in the Cabinet or with a complete change of the political party in power. Under this system finance may be ruled by quite another governmental department, the Treasury, and functions be inefficiently co-ordinated. Apart from that exercised by the whole Cabinet there may be no central control, and even a Cabinet decision may be overruled by Members of Parliament asking awkward questions. The outstanding example of this system of control is the administration of the Post Office.

B. Control by a committee of a local Council where the general manager is a 'local' civil servant, and the supreme authority the Council, liable to change in personnel with changes in the political party in power. Here, however, the personnel does not entirely alter since the Committee includes a proportion of all parties and in addition a certain

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number of persons co-opted on grounds of experience or interest. Outstanding examples of this system are the control of municipalized gas, electricity, water, tram and bus services.

C. Control by a more or less permanent *ad hoc* public commission or corporation. This type of control has been widely adopted recently and is exemplified in England by the Board of Governors of the British Broadcasting Corporation, by various Dock and Harbour Boards and River Conservancies or by the Forestry Commission and the Electricity Commission and Board.¹ The personnel of these commissions differ widely in their appointment. In some cases the directors or commissioners are nominated as representatives by various interests such as the consumers (e.g. in the case of dock and harbours). In most cases, however, appointment is by the State Government or by appointing trustees on the ground of ability alone.²

In the previous chapter the question was posed how far the internal relations of national organizations for industrial production would prove efficient enough to extend the field of nationalization as against private 'capitalist enterprise. Hitherto the industrial transactions in which national and consumers' organizations have *traded* have been mainly confined to those transactions where :

- (1) The consumers (including industrial buyers) faced by a private monopoly are numerous enough, as in the

¹ The case of electricity is interesting in that the work of organizing the National 'grid' system is separated from that of managing the sales of electricity in bulk, the primary activity being assigned to the Electricity Commission, the secondary to the Electricity Board.

² For a discussion of different principles of appointment see Morrison, *Socialization and Transport*, Chap. X.

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case of common services or public utilities, to insist on an alternative organization ;

- (2) consumption and conditions of production are fairly stable and certain, and the risks of mistakes in forecasting the market demand or allowing for variation in the bounty of nature comparatively small.

In both cases adaptability to the caprice of nature and human nature are not required to any great degree, and it is conventionally held that enterprise in capturing or even retaining consumers' custom and in dealing with ruthless competitors and stark nature will never be obtained under a nationalized organization. But this begs the question of what precisely is implied by such organization ; it is possible that in the newer forms of *public* control of 'C' type, the administration will be livened up and will be at least as enterprising and efficient in conducting risky transactions as the joint stock company. The capitalist entrepreneur who supplied his own capital and management and paid himself by a profit was no doubt quick in making decisions and in adapting himself to his customers and to nature's behests ; and in many sorts of transactions, where the scale of organization is small and the markets he has to cope with tricky, he can still show characteristic enterprise and initiative. But in the joint stock company organization, there is no individual entrepreneur and profits are distributed as dividends ; hence there is no *prima facie* reason for expecting the same 'alertness' to opportunity or unremitting supervision of detail, and there may not be much difference here between the nationalized organization of industry and the modern forms of capitalism.¹

¹ In the following quotation from Chapman and Ashton (*Statistical Journal*, April, 1914), for instance, the reasons that are given for the association of certain transactions with joint

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The efficiency of national control, as indeed capitalist or consumers' control, of large-scale operations depends on the precise form of organization and procedure adopted. The civil service has been criticized for its bureaucratic tendencies and red-tape. This is, in part, dictated by fear of Parliamentary criticism on details. The civil servant expects to be blamed if things go wrong but *not* praised if things go right¹; so naturally he plays safe and tries to unload responsibility on to others—'passing the buck' is the American expression. But, in part, this bureaucracy is the natural outcome of the hierarchical system described above, and whether national organization can be sufficiently enterprising to cope with uncertain consumption as well as uncertain conditions of production depends on the evolution of a form of organization—of functional or line-and-staff type, perhaps—that will give the required elasticity. Nationalization does not solve all problems of industrial organization out of hand and ensure our all living happily ever after, as some Socialists seem to imagine, but raises the relations of employment, investment, and manage-

stock company control are strikingly similar to the conditions popularly cited as permitting efficient nationalization.

"The kind of work which can be economically organized on a very large scale is likely to be just that kind of work for which joint stock organisation will prove efficient. It is the kind of work which does not entail constant variation in the nature of the output and constant effort to keep orders in correspondence with the firm's productive capacity, or necessitate for other reasons unremitting supervision of detail. . . . The organisations with a board of directors and salaried manager is more suited to a stereotyped kind of production which goes on continually turning out semi-gradable articles, especially when the unit of purchase of the latter tends to be large."

¹ See Graham Wallas, *The Great Society*, Chap. XI.

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ment that we have been discussing, as problems of vital public interest.

§ 10. *Liaison*

A political science which will investigate these common problems of internal organization that national control shares with consumers' or capitalist control—problems of rule, of division of work, and of appointment—must be based on sociology and psychology. If forms of organization are the first consideration, the type of personnel obtained or obtainable for positions of ultimate control in that organization and his response to various sorts of stimulus follows naturally as the next problem. The efficiency with which large-scale operation can be conducted depends ultimately upon the ability of certain persons to organize and to appoint suitable persons for managing that organization or for appointing in their turn further persons to sub-manage. It is vital to any explanation of inefficiency to enquire into the capacity and the response to incentives of these 'key' persons, and to probe the logic which has entrusted them with this position. This enquiry will be undertaken in Chapters VI, VII, and VIII, and will lead us into the psychology of investor and administrators and the sociological factors which conduce and induce to efficiency on their part.

Meanwhile the important if passive rôle of *labour* must not be forgotten. Though not integrated into the organization for the positive control of national or consumers' co-operative any more than capitalist concerns, the employee may put a veto upon efficiency or *inefficiency* by his negative control in refusal to work under certain conditions, say the

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shift-system or dilution of labour. This negative control has perhaps gone furthest in Russia where the administration of factories is beset by 'Cleaning Councils' and investigating committees of workers,¹ but with a wide-awake Trade Unionism, it is by no means absent in certain English industries.

Employment implies not only appointment and subjection to the employer's rule but also a money payment or some other means to stimulate efficient execution of the employer's commands. Any investigation of the logic or illogic of actual organization must enquire how far such pecuniary payment is effective and how far it would be more efficient to give the present mere employee more positive control. Control by consumers or by the State are not the only alternatives to control by the capitalist, and many schemes of worker's control have been committed to paper. Few, however, have actually succeeded or proved efficient, and it is probable that other means must be found for 'securing labour's interest' in both senses of the phrase, i.e. for securing the employee's co-operation and ensuring that he is not exploited in his wages and other terms of employment.

As Catlin puts the modern conception of political science,² control is not confined to the exercise of an authority which can impose its will upon others by compulsion, but consists rather in a "parallelism of wills in terms of concurrent interests". How far the interests of labour are, or can be made, concurrent with the efficiency of industrial organization, and its will parallel with that of the ultimate 'core of control' will be discussed in the following chapter.

¹ C. Hoover, *Economic Life of Soviet Russia*, p. 263.

² *Principles of Political Science*, p. 70.

CHAPTER V

THE STIMULUS TO LABOUR

§ I. *The Social Environment of the Large Plant*

PART of the analysis to be pursued in this chapter has already been expounded by writers on industrial psychology. We are familiar with the distinction between the financial or pecuniary incentive of the wage, and the non-pecuniary incentives such as love of work, desire for recognition and other impulses, dispositions or attitudes often dignified with the name of instincts.¹ There is no doubt that the starving of these non-pecuniary incentives under modern factory conditions raise formidable obstacles to the efficiency of labour. The precise importance of each of these obstacles has not yet however been successfully measured and the effect of some of them have been exaggerated, while the importance of others have been overlooked. There has been a tendency to focus upon the relation of the worker to his work or his machine, to stress the baulking of his instinct of curiosity, creativeness and constructiveness, and his craving for variety that results from modern specialization, mechanization and monotonous routine, rather than on things often more important to him, his personal relations to his employer and his fellow-workers and neighbours generally. Among these social relations I

¹ For a justification of the somewhat generous use of the word instinct see Veblen, *Instinct of Workmanship*, footnote to page 28.

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shall first look to the worker's sense of equality and fraternity with his employer—to the feeling, if any, of personal relationship, co-operation and identity of interests; later I shall deal with his sense of dignity and respectability in the eyes of his neighbours and the community generally; and finally with his desire for sociability and the companionship of other people in his work and recreations.

All these non-pecuniary attitudes of mind have been greatly affected by the recent changes in industrial organization. They have often appeared as obstacles to the efficient performance of the industrial machine and are likely to present additional difficulties in future plans for rationalization. On the other hand some of these attitudes may occasionally help in the smooth running of the system ¹ and may be harnessed to increase efficiency. In that case the pecuniary incentive required for a given amount of effort will be less and the cost per unit of work reduced.

The social relation most directly affected by large-scale organization is clearly that of employer and employee. The incentive to work, that is, the willingness of the worker to increase or even maintain output in quantity, quality or economy is checked at the outset as soon as he finds himself 'divided off' as a mere employee, from ownership of the products of his labour. The hard work the peasant proprietor who is his own employer puts in, grubbing up his probably ill-situated and infertile patch of ground is a commonplace; but it appears also true that the more a mere employee loses personal contact with the owner-employer the more indifferent he will become to the efficiency of the

¹ e.g. (see below, § 4) the attractiveness of the companionship offered by large factories.

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industrial organization and the more he will stick to old habits, customs and conventions and resist the innovations characteristic of modern industry. Even if he is induced to adapt himself to a new technique by a higher pecuniary payment, psychological 'unrest' will supervene and rob that new technique of much of its superior efficiency. The employee's sense of fraternity and social equality with his employer and the sense of his own dignity and self-respect tends to be lost as the size of the group enlarges; he identifies himself less and less with the interests of the firm.

In the plant or organization, such as a small house-building firm, employing less than 5 persons the employer is, like the medieval master-craftsman, working side by side with his employees; he is a co-worker and 'mate' and all may identify themselves with the business. In the plant employing 6 to 20 labourers, the small workshop, the employer may not actually work with his sleeves rolled up among his mates—he is more in the position of a supervisor; but at the same time he probably knows all his employees by their Christian names and is on familiar terms with them. There is a certain give and take and all are of equal status and are likely to find a common basis of interest. In the next biggest size distinguished in Chapter II, the large workshop employing from 21 to 50 men, the group is no longer the size of any 'team' known to sport and the team-spirit is difficult to keep up. The employer may be designated by the American term of 'boss'. He has become a sort of army sergeant inclined not to call his men in a Christian spirit but rather to shout for them. Discipline takes the place of community of interests, and more stress must be laid on the pecuniary incentive

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of the wage. At the next largest size, where 51 to 100 persons are employed in a small factory, the employer may possibly have attained a different social class and may be compared to a lieutenant in the army. The incentive to efficiency of the feeling of 'being in the same boat' is lost, and the ordinary employee can no longer regard his own interests in the business as identical with his employer's.

There are by now probably three ranks, since an N.C.O. grade of foremen comes between the officer-employer and his men.¹ The employer though possibly regarded as a friend and knowing every employee by his family (if not his Christian) name, is looked upon as someone not themselves. At best, paternalism and its corollary loyalty, now takes the place of camaraderie and identity of interests; mechanical devices such as 'clocking in' to ensure punctuality at the work must now be imposed and 'tab' kept on behaviour in the works by output and idle-time records.

Thus the incentive of identification of oneself with the firm and a feeling that one partly 'owns the place' or at least has a stake in the enterprise gradually fades out as the plant or firm gets larger, and with it the incentive of equality and sense of dignity. Where a 100 to 250 men are employed, the number of an army company under a 'captain' of industry, a man can no longer consider himself as an independent worker using his own skill and judgment or consider the tools and machines as his own. Like this equipment he appears to be a commodity merely placed in a factory to ensure proper flow of work. The progress of mechanization and power transmission will possibly demand sub-

¹ Chap. IV, § 6.

mission to a routine of multiple shifts¹ in which he shares one machine, as Box and Cox did their lodgings, with another worker. Box—and Cox—may, and do, resist this loss of a sense of property by blaming all mechanical breakdowns on Cox—or Box—and refusing to take any responsibility for break-ages, waste material or quality and quantity of output.

It is still possible, however, for paternalism to subsist and the 'united family' feeling to flourish. It was perhaps of this size of plant that Mr Baldwin spoke so eloquently in the House of Commons in March 1925.

"I worked for many years in an industrial business and had under me what was then considered a large number of men. . . . When I was first in business I was probably working under a system that was already passing. . . . It was a place where I had known from childhood every man on the ground, where I was able to talk to men, not only about troubles in the works, but troubles at home, where strikes and lock-outs were unknown, and where the fathers and grandfathers of the men had worked and their sons went automatically into the business. It was also a place where nobody ever got the sack, and where we had a natural sympathy for those who were less concerned in efficiency than this generation is. There was a large number of old gentlemen who used to spend the day sitting on the handle of a wheelbarrow and smoking their pipes. Oddly enough, it was not an inefficient community."

Where more than 500 are employed, the 'major' or 'colonel' at the head of the plant, if he is at all rational and logical, will be sitting in an office, have several sub-managers under him and will have to spend a great deal of time away from the shops occupied with files and clerks thinking out plans.

¹ Chap. IV, § 4.

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Though there may still be a certain esprit de corps, red-tape and bureaucracy are beginning to creep in. The employer's withdrawal will set him off as a person apart and all traces of a busy united family will have disappeared from the plant. The employer may not even recognize his employees by sight but merely have a vague feeling that he has seen that face before somewhere. The process of depersonalization may well be complete and the social atmosphere of institutionalism in full blast. The same efficiency of labour may be obtained, but only at an increased cost in supervisory staff, complicated accounting methods, precise wage-systems, liberal welfare provisions, checks and balances, scheduling and routine. Direct access of the individual employee to the employer has usually to be abandoned, and the two can only meet through employees' delegates and representatives. Finally, when the plant contains more than 1,000, a towering hierarchy of supervisors, works managers and general managers will rise above the individual employees, who may not even know their employer by sight. He may in fact have his office at some commercial centre miles away from the plant, and through departmentalization the employees may have completely lost touch with one another. The incentive of an esprit de corps has gone, and the worker feels no longer a man but a mere cog in a huge machine, a mere check number filed away in the records.

The *direct* effect on a man's efficiency of this mere matter of size is indeed quite tangible. The organization is not *his* organization and unless he is afraid of dismissal and unemployment he cares little for any *dis*organization due to his leaving at a moment's notice or absenting himself without any notice. Labour turnover and lost time are high and since

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the firm is looked upon as something outside and foreign to himself, his behaviour betrays a certain carelessness in handling 'its' material, tools and equipment. Of course, measures can be taken to circumvent these natural reactions; but whatever the measures, whether house organs, welfare work, relentless recording of absence and wastage, suggestion schemes¹ or even Works Councils, they all involve additional cost.

It is, however, in the more *indirect* effects upon efficiency that the increase in the size of firms demanded by economic logic finds its greatest illogical obstacles. An atmosphere is created in which it is difficult for labour to make the necessary logical adjustments for the sake of general industrial efficiency. It is natural for 'employees' who feel they are not identified with the organization for production, and are just 'hired and fired' like raw material, to form organizations of their own in the shape of Trade Unions that may watch their own particular interests. The trade practices which the Unions establish and defend, if necessary by striking, are conservative and difficult to adjust to any new requirement of technical efficiency. But it is not necessary for any specific organization to inculcate inertia. I have found evidence of deliberate restric-

¹ Professor Z. C. Dickinson (*Michigan Business Studies*, Vol. I, No. 3; and *Quarterly Journal of Economics*, Aug. 1932) considers that the value of suggestion schemes lies less in the improvement of technical equipment, the airing of grievances and the discovery of employees worthy of promotion, than in the establishment of their interest and co-operation. He concludes that suggestion schemes are more important in larger than in smaller firms and that various considerations "point towards a greater sphere of usefulness of formal additional channels of communication, from men to managers, in large than in small establishments".

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tion of output even where Trade Unionism was excluded.¹

To use expansive capital equipment more efficiently it is logical, as pointed out in Chapter IV, to work *it* long hours, and this can be done without causing fatigue among the human workers by working *them* short shifts. This shift system while reducing labour's working hours, involves not only the sharing of machines mentioned above, but also social and family readjustments of which the labourer 'may not see the point', unless his interest is more closely identified with the firm's efficiency. He may not see the point for instance of disturbing family habits by working sometimes in the morning, sometimes in the afternoon, his sons or daughters being perhaps on the reverse shift and thus duplicating the serving of meals. Unless there are very potent incentives to the contrary the inertia of custom and convention will prove the stronger force.

This is only one instance of the inadjustability engendered by the atmosphere of indifference to industrial efficiency that the large firm naturally creates in labour; and many of the more advanced employers have come to the conclusion that it is this atmosphere that must be dispelled and not merely circumvented by welfare measures.

Some have tried re-inserting direct personal intercourse into their large-scale institutions by engaging supervisors or observers who will take a personal interest in employees to the extent of private interviews.

At the Hawthorne Works of the Western Electric Company the importance of such a policy was first discovered in an experiment on the effect of certain changes in the conditions of work. Efficiency in-

¹ *Economics of Fatigue and Unrest*, p. 263.

creased enormously, but it was not so much elimination of fatigue that was held accountable as the method of supervision. "The provision of an impartial person to observe change became itself the greatest change, and it has led to a complete revision of the Company's conception of supervision." A plan of interviewing all the 40,000 employees has been adopted.

"The person interviewed can talk of any topic he chooses for as long as he likes to a trained listener provided by the Company; he is paid his average earnings for the time thus spent. Already over 15,000 workers have been thus interviewed; the effect has been an unquestioned improvement of morale in the plant and a complete revision of the Company's method of instructing supervisors."¹

More revolutionary experiments have also been tried in an attempt actually to break down large groups and create smaller units with which each individual worker can identify himself. The leading practical exponent was Mr. Bata, the Czecho-Slovakian shoe king. He split up his huge works, employing some 12,000 persons, into 250 semi-independent departments, each of them becoming a separate accounting unit.

"Each of these departments debits and credits its neighbours with the goods delivered or received. Each workshop buys all the material it needs from the workshop next before it in the cycle of manufacture, and passes them on to the next after. It can, if it wishes, refuse a consignment of doubtful quality; or point out that the goods it receives could be bought outside at a

¹ *Supervision and Morale*, by Elton Mayo. *Journal of the Nat. Inst. of Industrial Psychology*, January, 1931. For greater detail see *Industrial Research at the Western Electric Co.*, issued to members of the International Management Institute, Geneva.

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lower price, and refuse to pay more. . . . Every workshop and department has a double interest in the proper execution of the work. They share in the profits resulting from a reduction in their costs or an increase in their output ; and they bear the consequences of any poor quality in their work, as shown by the refusal of their goods by the next workshop.”¹

M. Dubreuil, formerly Secretary of the French *Confédération Générale du Travail*, may perhaps be considered the major prophet of this movement toward industrial federalism. In a paper read before the centenary meeting of the British Association² he commented “on the practical impossibility of making the spirit of zeal for the general success of the enterprise penetrate all ranks, and recognized that it was vain to dream of establishing a system of profit-sharing giving sufficient satisfaction to the individual interests of each, from the most highly placed to the lowliest of the men engaged”. Declaring that “most men have the short view” and that “we must take this myopia into account” he seizes upon the possibility—

“of dividing up the business to show that there is in it a means of reducing the business to the range of the visual field of the average workman. If the outlook of the ordinary man cannot include the whole of the business and simultaneously perceive the place which he proportionately occupies, it is incontestable that this vision will become much easier for him if its limits are contracted to the narrower range of a ‘department’, or for that matter a single small plant of a multiple firm.”

This indeed was the view of the political scientist in the democratic Greek City State. In order that all citizens should take their share in government

¹ *Working Conditions in a Rationalized Undertaking. International Labour Review*, Jan. and Feb. 1930.

² See *Business and Science*, pp. 86-97, The Sylvan Press.

Aristotle thought their number should be no more than could be reached by one voice.

Limitation in the size of autonomous industrial groups by some federal form of constitution will undoubtedly facilitate comprehension by labour of economic and management problems. Yet without specific organization of members of the group the facilities for democracy may not be utilized. Hence the potential value to efficiency of Trade Unions and of Works Councils where representatives are freely elected by the workers. The value of these organizations to industrial efficiency is at present potential rather than actual since they do not interest themselves sufficiently in the necessary adjustments to modern technique. They are suspicious of new piece-rate systems of wage payment, of time and motion study, and of scientific investigation generally; they hold off, instead of participating in these experiments, as they might, to see that the policy eventually adopted will be for the common benefit. There are successful precedents, even within the capitalist system for workers listening to experts, helping to get at the truth themselves, and acting upon it when obtained. The more firmly established English Trade Unions employ experts in piece-rate setting as secretaries,¹ and seek advice on changing business conditions from their own research bureaux or from associated research groups; in some English plants, notably Rowntree's,² the workers help in ensuring the impartiality of time studies undertaken by psychologists; and in one American industry workers are to be found deliberately determining adjustments in industrial policy.

The Amalgamated Clothing Workers of America is

¹ S. and B. Webb, *Industrial Democracy*, ed. 1902, p. 182.

² B. S. Rowntree, *The Human Factor in Business*, pp. 12-15.

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a large Trade Union that carries on all the activities of a Trade Union. They insure their members against sickness and unemployment. They negotiate collective agreements with employers, they conduct strikes against employers if their standards are not agreed to, and carry on a systematic fight against non-union shops and anti-union districts. But they do much more than this. They recognize the inevitability of industrial changes, if competitive efficiency is to be maintained and improved, and try to co-operate constructively in bringing these changes about. To quote from the 1928 report of their general executive Board :

“ The facts about our industry may often be unpleasant, but we cannot afford to disregard them.

It has been in this process of adjustment of the industry to new and changing conditions that the Union has made, perhaps, its greatest contribution to the industry. Its officers have assisted the industry in the actual practice of adjustment. They have themselves experimented with various types of construction and brought to the industry the results of their experiments. They have suggested improvements in the management of the shop. And they have even on occasion taken the initiative with individual manufacturers in proposing ‘ new lines ’ that might add to their total volume of business and therefore to the employment and annual income of our members.”

In the relations between labourer and employer there are two alternative methods of facing the march of technical progress. The employer may introduce technically needed changes without consulting labour, changes which labour will then fight to the last ditch. Scientific management, Bedaux systems, dilution of labour will thus be opposed by craft traditions and customary rates of output, until all the technical possibilities of increased production of wealth will be lost in that last ditch. Or a policy of ‘ Informed

Joint Control' may be initiated in all workshop matters that, "have their effect on the daily life of the rank and file of workers".¹ The scientific investigation of human efficiency can then be undertaken under the auspices of both parties and in conditions that will ensure not only impartiality but the actual adoption of the policy scientifically recommended.

§ 2. *Pecuniary and Trans-pecuniary Incentives*

Attention has been concentrated upon the loss of the incentive of personal relationship because it is the clearest instance of the self-stultifying tendency of modern industry. Larger industrial groupings are technically more efficient, but they tend to make labour less willing to co-operate. In consequence of this breakdown in a strong non-pecuniary incentive, more stress must be laid on the pecuniary incentive of the wage. As a psychologist has recently put it, "modern industry contains little that is inherently interesting, and the chief incentive to work is undoubtedly the weekly wage."²

But the pecuniary incentive is seldom a seeking after money for its own sake, simply for hoarding or acquisitive purposes. The ultimate source of the incentive may be non-pecuniary, satisfying perhaps some 'instinct of superiority' urging one to have a bigger income than one's neighbour³; or it may be 'transpecuniary'—looking 'beyond' the mere amount of money to the spending of it. The force of the incentive will then depend on when and how

¹ Morrison, *Socialization and Transport*, p. 225.

² S. Wyatt, *The Human Factor*, p. 3, Jan. 1932.

³ Skilled workers, for instance, are liable to insist that their wages should be a fixed proportion above that of the unskilled. See Clay, *The Problem of Industrial Relations*, Lectures I to IV.

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the money can be used after it is received. Workers, I have pointed out,¹

“ value wages for what they will buy, and if no leisure is provided for buying desired objects or enjoying their possession, or if no facilities for pleasure are afforded by the locality in which they live and work, or again, if every effort of the worker to raise his standard of life—by buying a piano or indulging in some other luxury—produces an outcry among the employing class, then employers cannot expect the wages they pay to offer any great incentive to the workers.”

The standard of living adopted or aimed at is, in fact, of supreme importance as an incentive. There are some who set themselves merely a fixed conventional standard. In their case an increase of hourly rates of pay will merely result in fewer hours being worked, and an increase of rates of pay per piece merely in fewer pieces being made. Increases in wage will actually be the opposite of an incentive. And this case does not appear exceptional in England.² Conservatism and conventionality of this sort obviously sets up a serious obstacle to the rational development of industry for obtaining increased production per head. It can only be overcome by tempting the labourer with new goods and services that he can buy.³ Industries connected with housing are those that have expanded most since the war, and it is probable that if additional housing accommodation were provided for the working classes, many of the goods in joint demand with houses such as furniture, carpets, heating apparatus, gramophones, would continue to expand. Hence the importance of a liberal housing policy. Without room into which to place his furniture and other

¹ *Economics of Fatigue and Unrest*, p. 257.

² For actual statistical evidence of this tendency see H. M. Vernon, *Industrial Fatigue and Efficiency*, pp. 151-2.

³ See Lynd, *Middletown*, Chap. VIII, “Why do they work so hard?”

lasting belongings, the worker can only see additional consumption on food and clothes as the consequences of earning more and this, to him if not to her, is not particularly exciting. There remains consumption on amusement and holidays, and though these services have certainly expanded to the workers' demands the possibility of other trans-pecuniary objectives would undoubtedly stimulate him further out of his conventional rut and, particularly if additional leisure were provided by reducing hours of labour, create a new stimulus for efficient work.

§ 3. *Incentives and Conducives to Work*

The combined analysis of economists and industrial psychologists draws attention to various forms of incentive non-pecuniary, pecuniary and trans-pecuniary, that may affect the efficiency of labour. Output may fall in quantity and quality and economy, and accidents, lost time and labour turnover may increase because the labourer is not paid enough, does not like his work or his social and physical surroundings, or does not realize how he can spend additional wages. But these possibilities that can be shown to be probabilities by the statistical correlation of degrees of incentive with variation in output and the other indices of efficiency, are usually not sufficiently explained. In the social sciences, unable to resort to laboratory experiment, statistical correlation of overt events is seldom sufficient proof of cause and effect ¹ and we must therefore go deeper into the precise *process* whereby efficiency is stimulated. I say stimulated advisedly because the word incentive gives somewhat too narrow a view of the

¹ See Florence, *The Statistical Method in Economics and Political Science*, especially Chaps. XI, XIV, XVIII.

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possible process of efficiency-making or efficiency-marring as the case may be. Incentive suggests *inducing* and encouraging people to work harder, adding to their *willingness* to work ; but efficiency requires also that they should be *able*, should be given the capacity, to work harder. The English language is extraordinarily deficient in a word to express this process of *enabling* greater efficiency. Sir Josiah Stamp draws a distinction between incentive and what he calls "enlarged scope".¹ He points out that "if conditions are made wider, or easier, the same unaltered incentive may serve to achieve larger results, and no increase in that incentive is required", and instances a fall in the rate of interest which stimulates business in the sense that it gives additional scope for the existing degree of enterprise to make profits. In the case of labour the word 'nutritive' presents this notion applied to one sort of scope-giver or capacity-giver but *only* one sort ; and I am compelled to fall back on the rather vague word 'conductive'. To conduce may then be conveniently contrasted with to induce.

In order to increase efficiency, a factor such as wages must both induce and conduce efficiency. A steeply graded piece-rate, for instance, which trebled the wage every time the wage-earner doubled his output would tend to induce high output. But if, even at his maximum possible output, the wage-earner received less than sufficient to nourish him when it was spent, that wage-system would fail to be conducive to efficiency, since the worker would grow physically weaker day by day and then, presumably, die.²

¹ *On Stimulus in Economic Life*, p. 3.

² This is not only a presumption. The death-rate of the poor is considerably higher than that of the rich. See Florence, *Economics of Fatigue and Unrest*, Chap. XI.

Thus there are pecuniary (and trans-pecuniary) incentives or inducements and pecuniary (and trans-pecuniary) conducives. Moreover, in the labourer's case where he cannot alter the conditions under which he works, there are also important non-pecuniary conducives. The labourer becomes capable of producing efficiently only partly by means of the food and the clothing and housing on which his wage is spent. His efficiency also depends on the conditions he has to accept at his place of work. Long hours of work, lack of ventilation, etc., have been statistically shown to decrease output and increase accidents and lost time, and they have been interpreted 'as doing so by engendering 'fatigue' defined specifically as a 'lowered capacity'. Such conditions are obstacles to rational organization not through any lack of incentive but because they fail to conduce to efficiency.

§ 4. *Attractives and Conducives to Mobility*

Increase (or decrease) in the efficiency of labour has been dealt with hitherto as though it were merely a question of incentives or conducives to a given number of persons, already working, to work more efficiently. And that is usually as far as industrial psychology carries its analysis. But economics, when considering over the long period possible sources of the supply of labour to perform work adequately must also take into account additions or subtractions to the supply due to changes in the *number* of labourers. And, just as industrial conditions may act as incentives or conducives to work harder so they may also act as 'attractives' and as 'mobilizers' or 'directives' to make men more willing *and* more capable of entering certain occupations rather than others.

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Economists from Adam Smith onward have given a good deal of attention to the physical and psychological circumstances that give an advantage to one occupation over another* in this respect. Marshall has crystallized this analysis in the notion of net advantages.¹

“Every occupation involves other disadvantages besides the fatigue of the work required in it, and every occupation offers other advantages besides the receipt of money wages. The true reward which an occupation offers to labour has to be calculated by deducting the money value of all its disadvantages from that of all its advantages; and we may describe this true reward as the *net advantages* of the occupation.”

Thus one of the advantages to be thrown into the balance to calculate the true reward would be, to quote Adam Smith, the “agreeableness” of the employments themselves. Disadvantages would, to quote Marshall again, include labour carried on “with unwelcome associates” or “occupying time that is wanted for pastime or for social or intellectual pursuits”,² and to the sum of the disadvantages economists have applied the term the Real Cost of an occupation.

Conditions likely to attract or repel labour may be both pecuniary and non-pecuniary. Clearly, differences in wages between one occupation and another are of first importance, and three of the five³ principle circumstances which as far as Adam Smith was able to observe “make up for a small pecuniary

¹ See Florence, *Economics of Fatigue and Unrest*, Chaps. VII-X.

² Marshall, *Principles of Economics*, II, iv, § 2.

³ The other two are “the agreeableness or disagreeableness of the employments themselves” and “the small or great trust which must be reposed in those who exercise them.”—*Wealth of Nations*, Book I, Chap. X.

gain in some employments and counterbalance a great one in others" are in essence pecuniary too—"the easiness or cheapness or the difficulty and expense of learning them"; "the constancy or inconstancy of employment in them"; and "the probability or improbability of success in them". But many non-pecuniary conditions may also exercise attraction or repulsion and, as with incentives, too much importance has been attached to the characteristics of the work itself; too little to the social relations involved. Insufficient attention has been paid, for instance, to the fascination that *respectability* and *sociability* appear to offer to the average man or woman. It is highly respectable to keep hands clean and to be able to wear a stiff collar and trim clothes throughout one's work. A clerk or a sales-assistant can, according to sex, wear the black coat or the art-silk frock that manual labourers have to reserve for Sundays, while actually at work. Hence in spite of the additional time and money spent in education and the monotonous and sedentary nature of the work, there is no lack of applicants for these gentlemanly and lady-like distributive and clerical occupations. But the attractive power of sociability is perhaps still greater and has almost escaped notice altogether.

Large-scale organization, though it has reduced the incentive of equality, fraternity and personal contact of employer and employee, has enormously increased sociability as between employees. In a large factory men and women can find plenty of fellow-workers of their own age with the same interests and outlook, and though some of these associates may prove unwelcome, as Marshall somewhat gloomily suggests, yet the more they are together, obviously the greater chance of finding congenial company. Working girls

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in particular appear to find in the large factory a release from the isolation, the conventional restraints and the petty irritations of home and family life.¹ "Possibly", as I have suggested elsewhere,² "about 10 per cent of occupied women and girls offer themselves for employment merely to avoid the tedium of home, helping mother sweep, wash dishes and darn clothes, etc." I attribute the low wages at which women are employed partially to this relative attractiveness of the large factory. Certainly the comparatively high real earnings, inclusive of board and lodging, that must be paid to domestic servants in small households, can be attributed to the unattractiveness of an existence isolated from working companions. Domestic service in fact being dirty work requiring a working uniform is unattractive on the score of respectability as well as sociability. The sociability of working with other girls and seeing plenty of customers seems entirely to outbalance any attraction in personal contact with one's employer. There has been a veritable flight from the home to the teashop, and the 'Nippy' waitress seems to be more contented in her working life than ever was Mary Jane, the domestic. Yet the Nippy is not particularly in personal contact with her multiple-shop owning employers while Mary Jane is in contact with her mistress. Too much so apparently.

This desire for sociability, though it has facilitated the acceptance of large-scale organization by labour, presents obstacles when the desire to stay, not necessarily in the home but at least in the home town among friends and relations, is opposed to the more efficient redistribution of labour; and it may present

¹ Graham Wallas, *The Great Society*, Chap. XIII.

² *A Statistical Contribution to the Theory of Women's Wages*, *Economic Journal*, March, 1931.

obstacles too, to the demand that investment in mechanical and chemical processes makes for continuous operation and the working of shifts.¹ The desire for companionship applies to hours of recreation no less than hours of work, and friends, particularly young persons of opposite sex, will want to be on the same shift and have the same spare hours. Though it seems logical that all retail shops should not be closed in a town on the very same afternoon, so that the consumer may get his wants somewhere, yet his total exclusion is in fact the practice. I can see no reason for this illogical state of affairs except that shop-assistants want their weekly half-day all on the same day. The abandonment of the Russian plan for an uninterrupted working week which was consciously adopted to make possible the "maximum utilization of capital equipment",² may have partly been due to the same reason. Owing to this unwillingness for even comparative isolation, industries or occupations demanding the working of shifts or the working of unusual schedules may suffer in their attractiveness and be unable to obtain the supplies of labour required.

Clearly conditions stimulating people to enter, or repelling them from entering, those occupations or industries where their work is or is not required are no less important than those stimulating work. It would be of little value to national efficiency for instance to provide inducives and conducives for coal miners to work harder if much more coal was not in fact demanded. As the history of England in the post-war period has shown, it was a stimulus for miners to get *out* of the coal-industries and into other industries that was required. The analysis of

¹ See Chap. III, §§ 2-4.

² C. Hoover, *Economic Life of Soviet Russia*, p. 248.

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efficiency-making and efficiency-marring factors must therefore stress the function of industrial conditions in affecting movements of persons in and out of occupations.

This process of moving or transferring people can be effected only by making them *able* as well as willing to move. Mobility, like work itself, has to be conducted as well as induced. The movement of miners away from the coal industry would have to be induced probably by relatively higher wages elsewhere, and conducted by cheap transport toward other industries and above all by re-housing facilities in their neighbourhood. Moreover, there may be persons willing to move and attracted to other occupations, but disabled from doing so, not by the physical difficulties such as the cost of transport, but by social obstacles. A woman may be stopped by Trade Union regulations from becoming a Scotch (though not an English) printer¹; and social stratification usually makes the sons of working people unable to move into the professions.² Conditions non-conducive to movements between occupations are thus of very wide scope and must be given a place beside non-inducives to move and the non-conducives and non-inducives to work.

§ 5. *Summary and Generalization*

The need for new incentives appropriate to the new rational organization of industrial society thus broadens out into a need for four sorts of stimulus. For full efficiency conditions must be such that

¹ *Study of the Distribution of Women in Industry*, Home Office, Cmd. 3508.

² See Ginsberg, *Economic Journal*, Dec. 1929; Saunders, *Economic Journal*, June, 1931.

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thoroughly what the precise incentives, attractives and conducives are to which labour, capital, or enterprise react. The short-period supply price is in Marshall's words "the price required to call forth the exertion necessary for producing any given amount of a commodity".¹ This corresponds to the incentives and conducives to work, and the lower this supply price—the lower the cost of incentives and conducives—the more can be produced by a given number of persons for a given expenditure, and the greater their efficiency. But the short period "assumes that the number of those who are qualified for work is fixed". The long-period supply-price must take account also of the changing number of people and "the distribution of the population between different trades", and corresponds to the incentives and conducives to move or transfer. Our analysis is thus an attempt to fill in the boxes prepared by the economist but usually left empty of all but a few samples; and we may follow the economist in carrying over the psychological analysis to the investment of capital and the administration of enterprises, even though the psychologist has done but little work here.

If industrial organization is to be rationalized to maximize production with the minimum of cost, it is essential to ensure, not only of labour but of all agents of production, that the technical conditions set up will not cut across social and psychological inducements and conducives to efficient work and efficient movement and adjustment. If they do, the obstacles to efficiency that will appear in reactions of human behaviour may well prove insurmountable, or surmountable only at an excessive pecuniary cost.

¹ *Principles of Economics*, IV, i, § 2.

CHAPTER VI
THE STIMULUS TO INVEST

IN the previous chapter it was suggested that the rational organization of industry is partially being checked by the insufficiency of incentives, attractives and conducives that might stimulate labour to work efficiently or to enter those occupations where work would be most efficient. The same sort of obstacles can be found checking the participation of capital in rational organization. To paraphrase what was said of labour, full efficiency requires conditions to be such that *capital is willing and able to be invested efficiently, and willing and able to move wherever efficient investment is possible*. But this phrasing would be imputing a personality to capital dangerously near to the superstitions of anthropomorphism and the idolatrous worship of such patriotic emblems as Britannia, or the Flag. Capital is not a person and whatever the stimuli addressed to capital, whatever the form of its supply prices, they must be stimuli and prices affecting the behaviour of those persons in whose power lies the investment of capital.

In the capitalist system those who have it in their power, to control capital are, broadly speaking, of three categories. The private man of property who is merely a potential owner of capital, the business administrator who merely determines policy in the use of other people's property, and the entrepreneur

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who both owns property and determines how it is to be used. If we adopt Mr. Keynes' terminology, all these categories may be called potential investors. Though it runs counter to the common usage, he prefers speaking of investment as "the act of the entrepreneur whose function it is to make the decisions which determine the amount of the non-available output, and consists in the positive act of starting or maintaining some process of production or of withholding liquid goods".¹ But, Mr. Keynes also allows investment in its popular sense to refer to the decision of individual members of the public to own wealth by holding it in the form of loan or real capital, i.e. securities, rather than in the form of money (or the liquid equivalent of money).²

The pecuniary inducement (incentive or attractive) to bring about an efficient use of capital bears a different name according as it is addressed to one or other of these three types of investor. The private proprietor is induced to invest by the rates of interest or dividend or more accurately, by the yield on their market price of capital securities; the mere administrator of capital is paid chiefly by salary or fee; while the owner-entrepreneur is paid in the form of a profit.³ The stimulus or failure of stimulus

¹ *A Treatise on Money*, Vol. I, p. 172.

² *op. cit.*, p. 141. The word investors is used in this sense throughout the *Report of the Macmillan Committee on Finance and Industry*.

³ It has been repeatedly pointed out (e.g. Florence, *The Statistical Method*, pp. 256-7; Cole, *Economic Tracts for the Times*, pp. 231-87) that unnecessary confusion has been engendered by trying to identify each of these names of payments with a stimulus for some specific function in the organization of industry. While interest is said to be paid purely 'for' abstinence or waiting, profits is said by some to be paid 'for' taking and bearing risks, by others it is identified with enterprise or earnings

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to induce rational behaviour on the part of the entrepreneur and the administrator will be considered in Chapter VII. The present chapter deals with the reactions of the actual or potential private investor in industrial securities.

It would be enlightening if full statistics could be collected of the type of persons or organizations who constitute investors in industry. In America answers to a questionnaire issued by the Federal Trade Commission to 367 typical companies showed that of the total par value of common stock, individuals held 64.9 per cent, trustees (e.g. banks and trust companies) 10.4 per cent, outside companies (e.g. holding companies) 10.0 per cent, brokers 11.9 per cent, the remainder being in the hands of non-profit institutions or foreigners. The distribution of preference holdings was similar.¹ Clearly the individual investor is still predominant, and this predominance is probably still more marked in England, though there are no statistics to prove it.

In England the Industrial Revolution occurred earlier and wealth inherited from that period has created an important class of *rentiers* living entirely or almost entirely from the proceeds of 'unearned' income—denizens of Cheltenham, Kensington, the Home Counties and other purely residential districts. The behaviour of these heirs of fortune and other private investors in handling their investments is of management. The truth is that each name arose to describe events at a different stage in the evolution of industrial institutions. Profits may usefully describe a form of payment occurring where entrepreneurs own, risk, and administer capital, but in the more recently developed institution of the joint stock company with its payments in the form of debenture interest, dividends, fees and salaries, there is no actual payment to which 'profit' can specifically refer.

¹ Marquand, *The Dynamics of Industrial Combination*, p. 130.

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usually marked by inertia and timidity. The chief drawback to industrial securities from the private individual investor's point of view are that they are not secure—in fact a better name for them might be insecurities. They are attended by varying degrees of pecuniary risk and uncertainty according to the period and terms of the stock. Obstacles to the provision of the cheap long-term investment of capital required for industrial efficiency thus arise in the potential investor's timidity and his insistence upon being paid handsomely for bearing the uncertain risks to which he is averse.

In the modern industrial organization of the joint stock company type the majority of ordinary shareholders have little real control over policy.¹ Once the shareholder has invested, the risks are borne but not taken by him—they are not of his choosing. This feeling of helplessness adds to his demands for handsome compensation, just as it does when he feels exposed to injury for which he is not responsible. Moreover, the joint stock company in its procedure and mechanism deprives the investor of any non-pecuniary incentive in a sense of power over, or of identification with, the business. The ownership of a few shares in a company which can at any moment be exchanged for the shares of another company and which are held with shares in many other companies, will hardly offer much of the old sense of property or stake-in-the-country type of incentive. In fact, the only important non-pecuniary incentive which, acting as a counterweight, can lighten the pecuniary load of interest that industry must pay to obtain investment, is the gambling instinct—and this does not appear to be strong among the class of persons holding or likely to hold investments, at

¹ See Chap. IV, § 9.

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any rate in England. Neither retired professional men, nor widows and other heiresses, nor trustees, nor the investment trusts in which they all seek for security, want to gamble. They have the *rentier* psychology and wish to play safe. The majority of them invest to obtain a definite annual income or a fixed sum at a definite date (depending on such trans-pecuniary considerations as provision for old age or education of children) and probably do not like the thought of a slight chance of heavy loss even though there be a big chance of moderate gains.¹ Private owners of property will therefore prefer hoarding in the form of savings deposits at the bank or investing in stock as secure as government loans or industrial debentures.² The incentive to overcome this preference, and to induce the bearing of uncertain risks by purchasing ordinary industrial shares must therefore be strong. Proprietors, divorced from personal contact with large-scale industry, become as indifferent as labour to its needs, and a high rate of yield must be offered to make proprietors willing to participate in the necessary risks and uncertainties.

The extent to which the man of private property will carry uncertainty-bearing investment does not of course depend solely on the incentives affecting his willingness. As in the case of the labour supply there is also the factor of *ability* to be considered. The main 'conducive' to invest is an increase in a man's total income and an increase in the proportion of total income that he saves. Anything that limits

¹ For the theory and statistics of this presumption see Florence, *The Statistical Method in Economics and Political Science*, Chap. VIII.

² On the high proportion invested among new issues in the form of debentures and preference stocks, see *Report of the 'Colwyn' Committee on National Debt and Taxation*, p. 20.

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his total income, such as increased taxation or a reduction of salary or business dividends, decreases his capacity to invest. When a business depression sets in a vicious circle is thus liable to be set up. A potential investor has less income to invest; a higher rate of interest must be offered to induce him to invest as much as before the depression; this continues to handicap industry in attempting a revival. And anything that limits the *proportion* of total income that is saved will also decrease capacity to invest. Mr. Keynes has shown that saving and investment are not the same thing, and are liable to diverge with changes in the market rate of interest, since the persons who save or have inherited savings do not coincide with those who invest. Nevertheless, that part of investment which depends upon the private owner of property must come out of the difference between his income and expenditure. He may devote more (or less) of his savings to hoarding and less (or more) to holding securities, but in proportion as savings diminish he can do less of either.

The proportion of income saved is not necessarily consciously determined but may be the indirect though inevitable result of the standard of living adopted. If the standard of living and spending is fixed in physical volume—the same tonnage of food, acreage of clothes, mileage of travel, being bought year by year—then a rise in retail prices or the price of personal services such as has occurred since 1896 will diminish automatically the income saved, because more money income must be spent on the same fixed standard. If standards of living rise, if the behaviour of the investing class is becoming more frivolous and pleasure-loving, or if more is spent on conspicuous waste to keep up with rival families, or

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more is spent on children's education to spread the old, or adopt a new level of gentility, then saving and the fund out of which securities might have been bought and/or held is depleted. To obtain funds industry will be driven to raise the interest on securities and thus increase its costs or to seek capital elsewhere than from the private property owner. The capital needed will have to come from reinvestment, 'ploughing in' of the income of business controlled by entrepreneurs or administrators, or will have to be raised through taxation by the State.

There is clear statistical evidence of the increasing relative importance in England of the re-investment of business incomes since the war, and of increasing Building Society and national and municipal expenditure on housing, roads and other public utilities, together with growing public ownership of telephones, electricity supplies and local transport systems.

Mr. Keynes estimates that £200 million was invested through Local Authorities and Building Societies in 1930 compared with £30 million in 1914¹; and the Board of Inland Revenue gives £168.4 million or 46 per cent of total net profits as the undistributed net profits (free of income tax) of companies in 1923 as against £96.1 million or 33 per cent of total net profits in 1912.² Mr. Coates estimates the undistributed and reinvested profits of companies and private traders in 1924 to have been £194 million, and compares this with the £89 million of internal new issues for home investment in the same year.³ Both these figures require revision,

¹ *The New Statesman and Nation*, Sept. 24, 1932.

² *Report of the 'Colwyn' Committee on National Debt and Taxation*, p. 18.

³ *op. cit.*, p. 17.

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according to Mr. G. C. Clark,¹ since the former includes about £30 million of undistributed profits of companies operating overseas, and in the case of the latter "the bulk of all new issues goes for the purchase of existing businesses and assets of all kinds". Mr. Clark's final figures for 1924 are £167 million for undistributed profits *at home*, £45 million for internal issues of *new capital*. The re-investment of profits thus appears to be three or four times as great as private investment. In America, also, we are told² "business savings are undoubtedly more important than individual savings as a source of capital".

Individual investments are, moreover, mainly restricted to large companies. It is in fact one of the economies of a large-scale organization that capital can be obtained cheaper.

"Its name is better known to the investing public, its standing can be more easily ascertained. A large firm may be able to borrow more than its present circumstances warrant, while a small firm of better real standing may go short. The greater ease with which large firms can borrow money may be one factor leading to the vertical integration of large undertakings, or the absence of vertical disintegration where we should have expected it."³

Though specialization on a limited variety of products (i.e. large-scale operation as defined in Chapter I) may be technically more efficient, firms are thus driven to expand their organization unnecessarily in order to catch the private investor's eye."

¹ *The National Income*, p. 137.

² Slichter, *Modern Economic Society*, p. 664; but see also Mills, *Economic Tendencies*, Tables 170-3.

³ Robinson, *Structure of Competitive Industry*, p. 62.

These drawbacks of the private proprietor as a source of investment mark clearly the obstacles to rationalization present in a society based on private ownership and assuming some enterprise among these individual proprietors. In the first stage of capitalist society a business man used his own property; in the second stage he induced others to lend him theirs; now a third stage is being reached where inducements to private owners to risk their property can no longer avail against timidity and inertia to obtain the increasing supplies of capital that are necessary. Recourse is had to a veiled forced levy on capitalist dividends by re-investment on the part of administrators and directors, or to a complete abandonment of private capitalism in favour of Co-operative or State capitalism.

This partial breakdown of private sources of capital is yet clearer when we turn from the aggregate of investment that is needed for efficiency to consider, as in the case of labour, the need for movement into those channels where resources can be most efficiently utilized—the need, in short, for the adequate *distribution* of resources. The stimulus that must be offered to induce private capitalists to *transfer investment from one security to another* or to invest in any particular industry, or in home as against foreign industry, may prove an additional expense. A complicated mechanism has been built up in the shape of the Stock Exchange, brokerage and issue houses, highly conducive to the mobility of investment between old issues of capital, and conducive in a less degree to the guidance of investment into new industrial issues. But though the private investor is thus enabled easily to transfer and direct his capital, it has been found increasingly

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difficult to attract it into the channels most likely to be efficient. Here the obstacles to rational organization are the investors' ignorance and the strong economic incentive offered to the company promoter's dishonesty. Either the investor is ignorant but does not know it, in which case he falls an easy prey to the optimistic and boastful prospectuses whereby the promoter can obtain funds for inefficient investment—and is called a sucker or a gull for his pains; or he is ignorant and knows it, in which case he is over-cautious and dare not transfer, or else so 'spreads his risks' by so-called scientific investment that his capital is invested in inefficient as well as efficient directions.

On this point the 'Macmillan' Committee are most explicit.¹

"It is all-important to the community that its savings should be invested in the most fruitful and generally useful enterprises offering at home. Yet, in general, the individual investor can hardly be supposed to have himself knowledge of much value either as to the profitable character or the security of what is offered to him. How easily he can be misled in times of speculative fever by glittering—even tawdry—appearances is proved by the experience of 1928."

In England during the year 1928 a total of 284 new issues of ordinary, preferred and deferred shares, and of industrial debentures were brought out on the market, largely to exploit pretentious developments in motor-cars, gramophones or artificial silk, the total capital subscribed amounting to £116,803,700.² By May 1st, 1931, the total market value, where ascertainable, had sunk to £68,133,600, a net capital depreciation of 42 per cent in two and

¹ *Report of Committee on Finance and Industry*, p. 166.

² *Economic Journal*, Dec. 1931.

a half to three and a half years. One hundred and seven of these issues were for companies which were wound up before May 1st, 1931, or whose shares had no ascertainable value.

In America the speculative boom of 1928-9 had still more disastrous consequences and repercussions. To quote Sir Arthur Salter ¹:

“The American investor had just learnt, under misleadingly attractive conditions, the habit of lending abroad. Always hitherto, America had been a borrowing, not a lending, country and her investing public had not acquired the psychology of those who by long experience expect losses to alternate with gains and are not unduly discouraged by the one or elated by the other. Moreover, America, more than any other great country, has a mass psychology which is subject to moods and impulses of a range and intensity not known elsewhere.

These conditions account for the scale of the speculative boom of 1929. In actual folly it has often been more than equalled. Nothing in recent years, for example, has touched the wild frenzy of the South Sea Bubble in England. But in range and in volume, and consequently in its far-reaching results, the 1929 speculation has had no equal or rival in economic history. Never before in the history of the world has there been a public, to be numbered not by hundreds of thousands but by tens of millions, with both the will to speculate and the financial facilities to enable them to do so. It is a new and terrifying phenomenon. . . .

When a speculator bases his operation, not on a judgment of economic realities, but on a guess as to what other speculators will do to-morrow; when, for example, he ‘bulls’ shares not because he thinks they are undervalued but because, although he knows there must some time be a crash, he guesses that others will first overvalue them more, and he hopes to get in and out again before the crash comes . . . the trough of the waves is deepened, not smoothed out, the storm is both increased in intensity and prolonged. Speculation based on econ-

¹ *Recovery*, 1st Edition, pp. 36-8.

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omic realities may be beneficial, but 'speculation on speculation' is definitely injurious. And when this happens on a vast scale, the results may be widespread and disastrous.

While the speculative boom was in progress in America the demand for money to speculate with was so great that money was attracted by high rates from all the principal countries of Europe. Their currencies were threatened by the sudden outflow of liquid capital. Their central banks increased their discount rates to lessen the drain—or divert it to others. The high cost of money in these countries discouraged enterprise that was just profitable, and depression began in Europe while the boom was still at its height in America. And then the crash came, the reaction sharp in proportion to the excessive upward movement which preceded it; and depression spread in extending circles of disaster."

At present the sources of knowledge available to dispel the ignorance and fear of the prospective investor in purchasing the securities of any particular country, industry or firm, are roughly four :

- (1) His own personal knowledge of the 'inside story' of a business firm ;
- (2) A general knowledge of the economic situation ;
- (3) Professional advice of an expert such as a stock-broker is supposed to be ; and finally
- (4) Knowledge based on published accounts of the firm's prospects or position.

The third source of information usually tends to play safe and to foster the policy of distribution of risks. The second source of information may be dismissed as available only to a select minority. The first source of information, though it may move some investment into more 'fruitful and generally useful enterprises,' is likely to move as much out as it moves in. As the Report of the Liberal Industrial Enquiry¹ puts it

¹ *Britain's Industrial Future*, p. 86.

“the actual proprietors of a concern are frequently at a serious disadvantage with ‘outsiders’ who can obtain access to ‘inside’ information, with the result that they may part with their property for less than its real value, owing to their ignorance of the actual facts. At the same time the knowledge by the public that there is such a thing as valuable ‘inside’ information often puts them at the mercy of alleged ‘inside’ information which is only intended to deceive, and of market tips which are part of a scheme of manipulation”.

or else it may frighten those who realize that they have no such ‘inside dope’ into avoiding industrial risks altogether.

As to the fourth source of information, that of published accounts, prospectuses often become sheer advertising ‘stunts’ liable to give a false impression, while balance sheets issued to the shareholders, convey entirely inadequate information. But in any case it is doubtful how far even the proprietor of average intelligence can react intelligently to tables of figures. It must be realized that investments are by inheritance and playing safe, diffused to such an extent that if a person is an investor in one company he is probably an investor in at least a dozen others, and he cannot enter into the subtleties and avoid the pitfalls of all the accounts and figures of all of them. What is necessary to conduce to efficient direction and movement of capital is some reliable authority to interpret industrial accounts. The Macmillan Committee recommend, in fact, that “relations between finance and industry should be so developed that issuing institutions of first-class strength and repute should vouch to the investor more normally and more fully for the intrinsic soundness of the issues made”.

The position, without expert guidance or economic

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knowledge, may be summed up in the words of the Liberal Industrial Enquiry Report.¹

“It is hardly an exaggeration to say that half the business of successful investment to-day in industrial shares consists in getting hold, in one way or another, of private information not available to the general body of shareholders or investors. The honest financier spends his time in getting hold of true information to which he is not entitled, and the less honest in spreading false information for which, under the cover of general darkness, he can obtain credence.”

It is evident that with all this ignorance and chicanery the supply price of efficient investment from private proprietors must be high. If there is an efficient outlet, it will have to make itself evident in extremely high yields before it can attract the prospective investor. Even then, it is found necessary for the attraction of funds that prominent names be found on the prospectus. ‘Guinea Pig’ directors have to be paid high fees without returning any administrative efficiency. They are appointed solely to attract investment and to give the impression that they will watch over the interests of the private investors without necessarily exercising, in fact, very much intelligence in that rôle.²

An alternative to the private investment of capital in the aggregate was found to be the growing reinvestment of profits within the business. But this is no alternative when it is a question of the redistribution of capital. It may be a mistake for a firm, however efficient within the bounds of any one line of product, to reinvest capital in the same line of production or even to use its capital to develop other lines by lateral or vertical expansion. The one policy may lead to overproduction at the ruling

¹ *Britain's Industrial Future*, p. 85.

² See below, Chap. VII, § 2.

price of the original line, the other to the small-scale operation of numerous lines and consequent distraction of management.

The obstacles to the provision of industrial capital rationally and economically from the private investor have proved so formidable in recent years that the participation of government has been proposed at various points. If the ignorance of the majority of investors is too great to be overcome by legal insistence on publication of more detailed accounts, and their timidity not assuaged by more expert and responsible issue houses, the government may have to give guarantees of at least a minimum interest. In place of guinea-pig directors there might even be substituted publicly appointed directors who would combine vigilance over the investors' interests with business intelligence. Such degree of nationalization would certainly be a logical *quid pro quo* for the government guarantee of an interest minimum. And if guarantees are given for investment in some directions, investment in other directions might be censored altogether. This is the plan embodied in schemes for a National Investment Board such as were proposed in the Report of the Liberal Industrial Enquiry¹ or by Mr. G. D. H. Cole in his *Next Ten Years in British Social and Economic Policy*.² The details of these plans, whether designed to develop and correlate national and municipal investment or to control private investment, have been clearly expounded and need not detain us, but the tendency they are designed to check and prevent must be clearly kept in view. It is, in the words of a resolution of the Labour Party Conference of 1932, "the waste and mis-direction in the use of long-term capital".

¹ See below, Chap. IX.

² pp. 76-83.

CHAPTER VII

THE STIMULUS TO ENTERPRISE AND ADMINISTRATION

§ I. *Pecuniary and Non-Pecuniary Incentives*

THE third agent in the modern organization of production besides labour and invested capital is that variously described as the entrepreneur, the management, the administration, the ultimate or higher control, or business leadership. The reason for this plethora of names is partly that they refer to different and often incomplete phases in industrial development. It was pointed out in Chapter IV that ultimate control is never entirely divorced in the capitalist system from ownership of capital. The 'entrepreneur' refers to the phase in which the ultimate control was (and often still is) combined in one person with management and ownership of all or most of the capital, while the 'administrator' refers to the phase where the ultimate 'core' of control is divorced from mere ownership and devolves on a combination of the upper ranks of manager and that portion of the capital which is represented on the board of directors. This more modern phase, though it has been developing in practice for the last fifty years, has not yet engraved itself upon the economist's mind or, for that matter, upon the popular imagination, and no single word has been coined that satisfactorily refers to the actual situation. Administrator, though it

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is now adopted by authorities such as Sheldon ¹ and endorsed by the International Institute of Management, conveys too much the bureaucrat without enterprise, and we shall have occasional recourse to the vaguer but more comprehensive expression of the business leader or chief or the higher control.

Whatever the name used, the important work this third agent is called upon to perform in modern industrial society has been indicated in Chapters III and IV as general policy, appointment and organization. Organization and general policy may refer to transactions internal or external to the firm. *Within* the large, highly capitalized and organized firm such as the joint stock company with specialized managers there are a variety of possibly conflicting interests (by which is meant persons with pecuniary inducements to behave in a certain way) ranging from that of the bankers and debenture holders requiring security of investment, through shareholders of various categories willing to bear risks (including promoters and financiers) to the specialized management and the routine labourers. These variegated interests require to be co-ordinated into a going concern; and agreement must be obtained on the distribution of gross revenue between wages, salaries and capital re-investment. *Outside* the given firm are not only the final consumer but other firms transacting business in the same industry or connected as suppliers of its materials and equipment or as demanders of its products. Profitable relations must be maintained with these outside interests by a suitable price and output policy which may involve large-scale operation, and the possible advantages of co-operation and amalgamation must be duly considered as against a policy of competition.

¹ *The Philosophy of Management.*

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What are the pecuniary incentives to stimulate this work of internal and external administration ?

If all the forms of pecuniary incentives were listed in order of their strength, the schedule might plausibly be drawn up as follows :

1. Profit. The remainder after subtraction of expenses from receipts.
2. Commission on Value of Goods Sold. Discriminating Fees varying with Values involved.
3. Tips.
4. Progressive Piece Wage.
5. Straight Piece Wage. Standard Fees per Transaction.
6. Degressive Piece Wage.
7. Time Wages, Short Term—Day or Weekly Wage.
8. Time Wages, Long Term—Monthly, Quarterly, Annual Salary. Annual Fees.

The position of tips in this order is perhaps somewhat arbitrary—the theory of tipping has indeed not yet been written ;—but there can be no doubt that among the more usual pecuniary incentives, profits are the strongest, and time wages the weakest in their results on efficiency. Profits are the remainder when expenses have been subtracted from total gross receipts. They differ from wages or interest in increasing or decreasing not at a constant ratio to the amount worked or invested, but at an ever accelerating or slackening rate, and it does not require a long mathematical formula to show that the slightest rise in receipts or fall in expenses may mean a manifolding of profit. Suppose a manufacturer of shoes gets 30s. for each pair, but has to pay out 28s. in materials, wages, interest, rent, etc. If he can reduce his expenses by one-seventh to 24s. while holding the price at the old level he has increased his profit on each pair from 2s. to 6s. In short a decrease of one-seventh in expenses results in three-

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fold the profit.¹ Hence the gradual change over from payment in the form of profit to an entrepreneur toward payment by salary (i.e. time wages on long terms) to a general manager or annual fees to a director, is likely to have a profound effect on the provision of efficient administration. Here indeed are two reasons for the illogical survival of the small-scale organization over the large-scale. Every capitalist firm works for a profit, but obviously the smaller and therefore the more numerous the firms producing any given aggregate of wares or services the more are the points at which calculations of the profitability of any venture are made. Further, this calculation is not, in the case of the fewer but larger firms, so closely tied up with administration as in the case of the smaller firms that are usually controlled by an entrepreneur. The larger joint stock company's salaried general manager is inclined to play safe, and since salary is paid as long as the business continues the salaried manager may, for instance, keep a works open in a depression after it should have been closed to save overhead costs.

This damping effect of payment by salary has been recognized and attempts made to remedy it in the recent policy of many American and some English firms. They have initiated schemes for sharing profits with their salaried managers and salesmen as distinct from schemes for a general profit sharing with all or the bulk of employees.² Fees to directors are sometimes also made to vary with the net receipts or with the dividends distributed.

Some readers may protest that this sordid calculation of financial interest, though applicable to routine workers and the 'lower orders' of the population

¹ See Florence, *Economics of Fatigue and Unrest*, p. 23.

² See Marquand, *Dynamics of Industrial Combination*, p. 159.

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and suitable to the chapter devoted to labour, is not admissible in the analysis of incentives to efficient administration. That realist, Adam Smith, was however of a very different opinion and was not prepared to exclude even his own profession. In some Universities

“ the teacher is prohibited from receiving any honorary or fee from his pupils, and his salary constitutes the whole of the revenue which he derives from his office. His interest is, in this case, set as directly in opposition to his duty as it is possible to set it. It is the interest of every man to live as much at his ease as he can ; and if his emoluments are to be precisely the same, whether he does or does not perform some very laborious duty, it is certainly his interest, at least as interest is vulgarly understood, either to neglect it altogether, or, if he is subject to some authority which will not suffer him to do this, to perform it in as careless and slovenly a manner as that authority will permit. If he is naturally active and a lover of labour, it is his interest to employ that activity in any way from which he can derive some advantage, rather than in the performance of his duty, from which he can derive none.”¹

But, Adam Smith proceeds,

“ if the authority to which he is subject resides not so much in the body corporate, of which he is a member, as in some other extraneous persons, in the bishop of the diocese, for example, in the governor of the province, or, perhaps, in some minister of state, it is not, indeed, in this case, very likely that he will be suffered to neglect his duty altogether.”

We are not here interested in bishops or governors of provinces so much as in employers and business chiefs. But Adam Smith's reference to superior authority is obviously just as applicable. If a time wage or salary fails in incentive the superior authority (if there is one) can always dismiss his inefficient

¹ *Wealth of Nations*, Book V, Part III, Art. II.

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subordinate ; or alternatively he can provide the incentive of promotion into a higher wage or salary grade. The quasi-pecuniary incentives of dismissal or promotion may therefore act as substitutes for direct pecuniary incentives to efficiency ; but only if there is a superior authority and if that authority has the capacity and willingness to discover the efficient and inefficient and the capacity and willingness to promote and dismiss them according to their efficiency.

In the public company there is normally a superior authority to the manager vested in the board of directors ; but that authority is greatly influenced by the opinion of the management itself. Though the directors and the higher management may be able to dismiss or promote the junior personnel it will be more difficult for the ' direction ' to dismiss the higher management itself. As far as the promotion of efficient and weeding out of inefficient junior administrators is concerned, this depends on the type of business leadership that is provided, a matter to be discussed shortly. Here we may anticipate so far as to point out that if leadership is obtained democratically by gradual promotion from the routine staff, then there will be a corresponding attraction of ambitious men to the staff and incentive for them to work efficiently. Every foreman or clerk will feel that he carries a director's cigar in his waistcoat pocket. But if, as is so often the case, leadership goes to a scion of the ruling family on the so-called ' stud ' system, then able subordinates who may have ambitious projects for the efficient development of the firm but are not members of the family, will chafe at what they will consider inefficient administration which they can never supersede. Their only hope is inter-marriage, but chances in that direction seldom depend on business ability

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unless a *mariage de convenance* is arranged. A well-known London city bank, recently merged, passed three times to sons-in-law in the course of its 200 years' career. Curiously enough the emblem of this bank was the marigold.

The analysis of the reactions of labour to various stimuli has taught us to beware of considering pecuniary incentives as of sole importance in making or marring efficiency. Though Adam Smith was undoubtedly right in considering one form of pecuniary incentive as stronger than another, there is the wider question how far pecuniary incentives of any form are strong or weak in comparison with what have been called their transpecuniary aspects and in comparison with entirely non-pecuniary incentives. To this wider question the answer must vary according to the type of business leader, entrepreneur or administrator, under discussion. For it is a capital mistake to suppose that there is just one type of business chief and one fixed set of incentives to which he will react ; that that type is marked by an insatiable appetite for pecuniary rewards, a machine-like precision and effectiveness, and an inhuman callousness to all non-pecuniary or transpecuniary considerations. This mistake is fostered, as I have pointed out elsewhere, partly by the economist's neglect of the variety and types of mankind¹ and partly by his "habit of describing the actions of groups of human beings in the passive voice or in the third person singular, and NEUTER at that". Thus when price changes are under discussion the usual wording is that 'prices are fixed' or 'are determined', not that so and so decides or would probably decide to change prices.²

¹ *The Statistical Method in Economics and Political Science.*

² *op. cit.*, p. 25.

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The head of a large-scale mechanized business remains a human being and his main lines of policy in a rationalized industry will vary with his inherited character, his antecedent environment, the conventions of his social class, and various psychological stimuli to which he is exposed. The policy of his business therefore is subject to ordinary human reactions to any given situation, to ordinary human solutions of the problems that are presented. In the firm operating on a large scale with high capital investment and a specialized expert staff such as we are envisaging, at least five main internal or external problems present themselves to the higher controlling authority, whether entrepreneur or administrator: (1) how to expand into still larger-scale operations and thus reduce costs and price; (2) how to co-ordinate line and expert staff; (3) how to appoint and promote willing and capable subordinates; (4) how far to co-operate or combine with firms transacting similar business; (5) how much gross profit to re-invest. The efficiency of the solutions that are found to these pressing problems is likely to vary for different types of entrepreneurs and administrators, and we shall mark them accordingly. It was argued in Chapter I that on the whole efficiency was furthered and costs reduced by large-scale operation and organization; hence high marks will be given for the likelihood of reactions under (1) favourable to the expansion of a *few* of the lines produced within one firm, and under (4) favourable to the co-operation and combination of firms. It was argued in Chapter IV that devolution of power by line and staff organization was probably that most appropriate to large-scale operation, but that the power of appointment must be reserved for the higher administration; hence high

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marks will be given under (2) for the likelihood of reactions favourable to co-ordination of line and staff, and under (3) for the likelihood of appointing ability. Finally, it was argued in Chapter VI that much of the capital required in large-scale mechanized industry would have to be found in the firm's own resources; hence, high marks will be given under (5) for the likelihood of reactions favourable to the re-investment of gross profit.

Different types of entrepreneur or administrator will, of course, vary in their efficiency according to the sort of industry in which they are engaged and the sort of organization they are controlling. The entrepreneur type is, for instance, probably more efficient than the administrator without capital of his own, wherever adjustments have constantly to be made as in 'jobbing' manufacture for specific orders or in agriculture or services, as against routine transport, banking or manufacturing of staple goods. Moreover, the different main problems may vary in their importance in different sorts of industries. In decaying industries re-investment for instance may in the long run be an inefficient policy; in others sufficient co-operation and combination of firms may already have been achieved. The system of marking that will be adopted must therefore be taken to apply to the administration of the general run of larger-scale businesses.

The discussion of how the pecuniary methods of payment act or fail to act as incentives to administrative efficiency was merely a preliminary introduction, and its conclusions may have to be severely modified in so far as the business man is not purely an economic calculator but a creature of habit, sentiment, emotions and instinct.

Clearly the stronger the non-pecuniary incentives

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and attractions to enterprise and administration and the greater the satisfactions into which given pecuniary payments can be translated, the cheaper (in pecuniary terms) will be the unit services obtained. Hence if we appear to be confronted with inefficiency and expense in administration, part of the explanation may be sought in insufficient non-pecuniary and transpecuniary inducements. The administrator must be paid extra to work 'against the grain,' and in discussing each type of entrepreneur or administrator attention must be drawn to such low non-pecuniary or transpecuniary 'induceability'.

Seven types of ultimate controlling authority are worth differentiating. The first two of these are mainly of the old entrepreneur variety administering the firm by virtue of ownership of most of the capital. The other five types are more of purely administrative variety, the first two deriving their authority from the holding of directorships (often however itself dependent on ownership of capital), while the last three derive their authority from the fact of general managership usually quite apart from ownership of capital. Thus in the first two cases and to some extent in the next two, the total stimulus includes that already considered in Chapter VI, namely interest on capital.

In business as in other walks of life 'some are born great, some achieve greatness and some have greatness thrust upon them'. The first and third type now to be distinguished has achieved greatness, the second is born great, while the others have had greatness thrust upon them, and these homely distinctions in the method of appointment will not be neglected when estimating which type of administrator is likely to lead to maximum efficiency.

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§ 2. *Types of Entrepreneurs and Business Administrators*

I. THE ENTREPRENEUR WHO HAS GROWN WITH HIS OWN BUSINESS. This is the type of autocratic business chief made familiar by the classical economists. He has come to the top by a sort of natural selection, surviving because he was the fittest in the struggle between competing businesses. But this struggling is becoming out of date, and he may no longer be the fittest under the new rationalized environment of large-scale operation and functional or staff-and-line organization.

His incentive is mainly pecuniary in the form of profits, though he may often be willing to work hard at a low cost per unit. Some writers even hold that the entrepreneur's losses in the long run and on the average have outweighed his gains, and that his services are thus obtained for less than nothing. There is indeed evidence that in the case of American farmers the entire profit accruing as the result of the work of the whole family was, in the years 1909 to 1927, practically the same as the wages of a single agricultural employee. Slichter, who quotes this evidence from King,¹ enumerates a number of non-pecuniary or quasi-pecuniary incentives, including gambling on one's own ability that make for a cheap administration on the part of independent entrepreneurs.

"When account is taken of all the men who prefer business ownership because of its greater security, those who prefer it because they are optimists and have great faith in their ability to make money, and those who prefer it because it gives them greater freedom and authority,

¹ *The National Income and its Purchasing Power*, pp. 146 and 312.

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and those who prefer it because of the prestige which it confers, the probability seems strong that the number of men who become independent business owners is sufficient to reduce the average (pecuniary) return for their services below the wages paid to employees of about the same ability." ¹

There may also be a strong non-pecuniary incentive in rivalry with competitors. Entrepreneurs appear to enjoy the game of competition, they love the secrecy of *private* enterprise and the sense of playing for a side, and they feel more zest in fighting against a rival than in combining with him. It all hangs, perhaps, on the pride of ownership, a petit bourgeois point of view. But after all these men *are* petit bourgeois.

The training and experience of this type will have been chiefly in shrewd bargaining, and added to probably a somewhat rigid mental equipment may not conduce to efficiency in managing the internal organization of a large concern. The entrepreneur may not have powers of co-ordinating the specialized work of managers and expert staff under his command, and he may be a poor judge of ability and use inadequate methods of measuring past performance when appointing or promoting those managers. The probabilities are however that the entrepreneur's many contacts with competitors and customers have given him a better working knowledge of human character than powers of co-ordination and that his appointments will be more suitable than his subsequent organization of the work of his appointees. If as in Table VII marks are assigned in respect of efficiency in the administration of a large-operation, functional or staff-and-line organization, the autocratic entrepreneur may be given I

¹ Slichter, *Modern Economic Society*, p. 718.

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out of a possible 2 for appointments, but 0 for co-ordination.

In respect of re-investment of funds the entrepreneur gets high marks. There is often a strong non-pecuniary instinct for gambling with resources which are (in this case) his own, and the self-made entrepreneur has not been brought up to expensive habits on which to spend the substance of his profits. In respect of expansion of operations on a large-scale basis the entrepreneur type is likely to keep to his established practice and is not prone to think out policies from such first principles as were enumerated in Chapter I. Hence, though he has initiative, the entrepreneur's initiative in reorganizing on large-operation lines can only be marked 'one'. When it comes to co-operating with other businesses the love of independence, and the individualism and 'devil take the hindmost' attitude that has helped the entrepreneur to advance in the competitive guerrilla warfare stage of capitalism will definitely check the development of larger organizations. With his strong sense of ownership the entrepreneur may prefer power over a small organization as compared with a share in power in a large amalgamation where he will no longer have complete freedom to develop and test his own ideas. He gets no marks, therefore, for co-operation.

II. A SCION OF THE FAMILY THAT FOUNDED OR OWNS THE BUSINESS OR SOME PERSONAL FRIEND OF THE FAMILY. This hereditary dynastic or aristocratic type of entrepreneur is characteristic of British industry, and though most prevalent in private companies is not unusual in public companies. In this case the pecuniary incentive to large-scale expansion though it is in the form of profit may be weak, since the family are already well-established. The trans-

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TABLE VII

COMPARATIVE EFFICIENCY OF TYPES OF ENTREPRENEUR OR ADMINISTRATOR

Types of Entrepreneur or Administrator.	Assignment of Marks in respect of Factors in Administrative Efficiency.				
	Co-ordination.	Initiative in Large-Scale Expansion.	Co-operation or Combination with Other Firms.	Reinvestment of Capital.	Appointments.
I. Self-made Entrepreneur	0	1	0	2	1
II. Family Head	2	0	0	1	1
III. Financier	1	±2	±2	2	1
IV. Director:					
A. Guinea Pig	1	1	1	0	0
B. Interlocking	0	1	2	1	1
C. Professional Man	2	1	1	1	2
V. Ex-Employee	1	0	0	2	1
VI. Ex-Technician	0	1	1	2	0
VII. Trained Administrator	2	1	2	2	1

pecuniary objects are stability and a conventional standard of life with plenty of leisure and long week-ends devoted to sport and other gentlemanly pursuits¹ rather than making one's way farther up the ladder. The attitude to his business is, for this type, almost feudal, and a certain reasonable amount of annual profit and the handing of the property unimpaired to one's heir is regarded as a right almost on a par with the rights of seisin, merchet, tallage, and heriot that were expected by the medieval seigneur or lord of the manor.

It is regarded as a 'right' by this type of business proprietor that he should send his sons to the same (good old) public school that he attended and prob-

¹ e.g. motor-boat racing and even hawking.

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ably to Oxford or Cambridge as well. Previous to a public school it is also regarded as necessary for a young gentleman to go to a preparatory school. From the age of 10 to that of 22 each son will be boarding away from home at an expense of from two hundred to three hundred and fifty pounds per year. All this must be paid out of the father's profit, not to mention daughters' possible attendance at equally expensive boarding establishments. Clearly the standard income required must be at least in the neighbourhood of two or three thousand pounds per year ; but after these 'conventional needs' are satisfied the head of the family may not be ambitious and may often take up a dilettante attitude to business. As economists put it, his demand for income in terms of effort will, after a point, become highly inelastic. He will be inclined to relax and no amount of extra pecuniary inducement will stimulate him to work harder.

In respect of co-ordination of line and staff as also of appointment, heads of family business are cramped by the restrictions of the family tradition. Logical organization is subject to the family relationship of the persons holding positions as managers or sub-managers, or wishing to hold such positions ; and there are examples of positions even on the expert staff being given in consideration of family connection rather than 'expertize'. Further, since a family that has held property for two or three generations tends to become aristocratic in outlook, any persons outside the magic family circle that are taken into the control of the business will generally have to be of equally good family and breeding. The selection is thus limited to gentlemen, school or university friends, perhaps, of the younger scions. On the score of efficiency of appointments for large-

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operation and expert-staffed businesses, therefore, the family firm cannot be given more than one mark, but on the score of co-ordinating efficiency may perhaps be given two. In spite of illogical divisions of functions such as were disclosed above in a typical family business¹ it must be recognized that the human beings composing an organization are not mere functionaries, and are themselves illogical. Among the higher ranks and the expert staff the more intimate family or personal relations lubricate ill-fitting parts of the organization, though the mixture of scions, friends, experts and promoted workers may put some sand in the oil. Lower down the ranks the foreman may be more successfully cajoled and 'handled' by a member of a family he has worked for all his life than by one merely appointed for his efficient orders. Jollyng a foreman along the path of efficiency by a preliminary passing the time of day or judicious enquiries into the health and progress of his family is a necessary art of the line officer, and is perhaps nowhere better performed than in the family business where the susceptibilities of the personnel are known but respected.

On the important question of re-investment of revenue in the firm, the family business is often restricted because of large holdings of stock that distant cousins, aunts, widows and even children may possess as a result of past inheritance through many generations. It is not felt right to deprive these members of the family—complete 'passengers' though they be—of their expected income. It would be 'letting one's people down'—and 'one's' people are not like ordinary share-holding people. Hence dividends are inclined to be kept up at the expense of reserves and re-investment.

¹ Chap. IV, § 7.

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As to co-operation or amalgamation with other firms the possessive feudal attitude which makes for identification of personal interests with those of the whole firm becomes an obstacle, when efficiency demands co-operation or even amalgamation. With the merger of a family business into a larger rationalized concern no longer possessing the family name this identification goes, and not even loyalty or esprit de corps may remain. All that does remain is the sentiment of the gentleman against hard toil and a lack of training in technical or even administrative methods. The standard of life expected 'as of right' then becomes excessive in view of services rendered.

III. THE FINANCIER. This plutocratic type is of growing frequency on the boards of large public companies formed as the result of amalgamation or combinations in which the promoter has played a part. Here the incentive is largely pecuniary. But the pecuniary reward does not necessarily depend on the efficiency of administration; it is usually obtained by differences or margins in the capital value of the shares held by the financier. The pecuniary interest of the financier is to buy shares cheap and sell them dear, and once he has sold his shares his interest in administrative efficiency is likely to evaporate. Even during his temporary holding of the shares it is the window dressing to attract the investor and to boost the shares that he strives for, not genuine efficiency.¹

¹ See Marquand, *The Dynamics of Industrial Combination*, pp. 118-20. Marquand, however, considers that the modern variety of American financier is more concerned with administrative efficiency. Wells, in his *Work, Wealth and Happiness of Mankind*, gives short biographies of leading varieties of financier-administrators.

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Besides the pecuniary takings by speculation the inducement of the financier may often be love of power. The purchase of a majority of the shares with voting rights will permit him to exercise a control over people and capital that is dear to his soul even though he lose money in the process. What else can explain the losses industrial magnates appear willing to sustain in purchasing control of newspapers that obviously will never pay, or in amalgamating as Stinnes did in post-war Germany the most divergent industries? Controlling public opinion, having a finger in every pie, King and cabinet-making and megalomania generally is not confined to feudal barons or modern politicians. Thus for big schemes the willingness and capacity of the financier may often be enlisted cheaply. His inducement may even be the simple desire for national recognition in the form of a baronetcy and subsequent peerage.

Undoubtedly this pursuit of speculative profits, power, and public recognition leads the financier toward a policy of expansion into large-scale operation, of association or amalgamation of firms, and of re-investing funds in business. As the self-made entrepreneur increasingly fails to cope with large-scale industry and the private investor is apparently becoming less venturesome in risking his capital on his own initiative, it is the financier who is now taking the initiative, very often using the same private investor's capital for his purpose, or perhaps borrowing abroad.

Whatever schemes may be going forward in the form of increasing the size of business organization and of amalgamation is usually the financier's doing. Finance is in practice the chief factor that tends to enlarge the actual size of a firm.¹ But this

¹ Chap. VI, p. 186.

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increase in size of organization or amalgamation may often be ill-conceived from the standpoint of efficiency. It may, for instance, take the form of indiscriminate integration such as we found in Chapter I to be of doubtful advantage. Hence it is difficult to 'mark' the efficiency of the financier's reaction to the problems of expansion of business, and of co-operation. It may in both cases be marked plus 2 or minus 2. For as Marshall remarks¹—

“ there are few who do more to increase the efficiency of labour in creating material wealth than the able and upright company promoter. . . . He may realize that some businesses have a greater future than is generally known, . . . may perceive their capabilities, procure the capital they need, bring them into unison and push them on their way to success faster than they would otherwise have gone. . . . In strong contrast with him is the promoter whose ventures are commonly chosen because he thinks he can induce others to believe they have a good chance of success, though he himself suspects they have none ; and who is careful to clear out from them before they collapse.”

In the making of appointments the financier often plays a particularly important rôle in putting salaried types of administrator in immediate control of the firm as managing directors.² Where the financier thus limits his activity ultimate control is exercised by two types acting together, and the salaried administrator, without capital or without influence with capitalists, may be able to secure at least some control only in this way.

The financier has probably a fair experience and flair for picking efficient men, and in the matter of co-ordination he probably has learned in a rough

¹ Marshall, *Industry and Trade*, II, ix, pp. 329, 331.

² See Chap. IV, § 9.

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and ready way to hold the balance even among the specialists he employs. Under both heads his reaction should perhaps be given one mark.

IV. THE EXTRANEOUS COMPANY DIRECTOR APPOINTED (by virtual co-option) *AD HOC* FOR SOME SPECIFIC PURPOSE. Three specific purposes may be distinguished; to safeguard investment interests, to interlock with other firms, and to bring in special knowledge.

Where a large supply of capital is required from the private investor whose psychology was discussed in Chapter VI, a director may be appointed solely for his 'drawing' power. Reputation is for this purpose more important than actual efficiency, and in England political, sporting, or journalistic activities or the mere possession of a title¹ may apparently take the place of experience and business ability. This type of director familiarly known as the 'guinea-pig' director may not even fulfil the function that might be expected of him, namely that of watching investment interests as against management interests; but in so far as he is effective his effect is likely to be in opposition to any great re-investment of gross profit since as a representative of shareholders' interests he wants the highest possible dividends declared.

Another reason for appointing extraneous directors besides attracting private capital, is to 'interlock' with other firms. Valuable contracts may be obtained if a potential contractee is on the board

¹ According to Mr. Horace Samuel in his *Shareholders' Money*, there are 654 Peers not distinguished before their elevation to the peerage as captains of industry or as active members of City firms, or in other ways known as executive members of industrial undertakings. These 654 Peers hold between them 562 directorates, giving a ratio of 1 directorate to every 1.16 Peers.

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of directors, but valuable contracts may have to be *placed* in exchange and not always, perhaps, on the most favourable terms.

A 'community of interests' between firms is often built up by appointing the same directors on the boards of the several firms. A glance at the Directory of Directors published each year will show that a great number of men hold directorships in a dozen or more of companies. In that case the ground is laid for closer combination in the future and for large-scale 'rationalization'. The interlocking director thus gets high marks for willingness to co-operate, but he is not likely to be interested in the internal affairs of any one of the many companies he directs and therefore may be counted an inefficient co-ordinator.

Finally, a director may be appointed for a special knowledge that may be helpful to the board. With increasing frequency professional men, such as chartered accountants, solicitors, and even tax-inspectors and inland revenue officers, whose opinions and ability a firm has learnt to respect, are brought on to a board of directors. This appointment of professional men is a development, hitherto practically unnoticed, that is likely to increase. It should lead to greater efficiency in taking advice from the expert staff and their general co-ordination within the whole organization.

Whatever the reasons for putting extraneous directors in control they are paid by fee which, unlike profits, does not vary intimately with administrative efficiency. Moreover, like the financier, they are not continuously at work within the organization and thus strengthen the board of directors rather than the management. The points about management that they raise at board meetings may be

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trivial and fussy, yet they are on the whole likely to strengthen the tendency toward large-scale operation since, seeing the whole wood and not isolated trees, they should override objections, on questions of detail, to the scrapping of small-scale practices. In the problem of the higher appointment, the professional director is likely to have a *much* wider, and the interlocking director a *somewhat* wider, knowledge of man than most entrepreneurs or administrators who have kept their noses close to the firm's grindstone. One mark may be assigned to all directors of this type for expansion into large-scale operation; but for appointing success, two marks to the professional and one to the interlocking director. The average ' guinea-pig ' director is likely to deserve no marks for his appointing efficiency.

V. THE EMPLOYEE PROMOTED UP THE RANKS OF A LARGE CONCERN, THE EX-FOREMAN OR EX-CLERK TYPE. This quasi-democratic selection usually produces a man reacting strongly to pecuniary incentive in the form of salary increases though his average level of monetary requirement and his standard of living is set fairly low. If the business is expanding, however, his corresponding level of education and adaptability may not conduce to adjustment to new circumstances. He will be inclined to rely on traditions and rule of thumb and will not acquire the ' paper ' method of control necessary for larger-scale operations; and though well-versed in the minor details of the business and a loyal subordinate he may be narrowly bureaucratic and a poor co-ordinator when in control of a large organization relying upon a specialized staff for expert advice. His general knowledge may be insufficient for weighing the pros and cons of this expert advice, and subconscious of this inferiority

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he may become a martinet. Dr. W. H. R. Rivers¹ has suggested that "one of the factors that enters into the production of 'red tape' is the activity of a defence-mechanism; that it is a protection adopted in a more or less, usually more rather than less, unwitting manner by those who find themselves confronted with administrative problems to which their powers are not adequate".

The ex-foreman or ex-clerk is often unable by his antecedents and training to take a wide view and may fail to see possible lines of development and expansion particularly if he was formerly employed on the production rather than the sales side. He will cling to the separate identity of the firm in which he was brought up and probably be averse to amalgamations and associations that might have led to a wider efficiency. Thus he must be given low marks for co-ordinating efficiency and no marks for initiative toward large-scale operations or willingness to co-operate. On the other hand, as a working member of the firm and not a mere absentee owner, the ex-employee will probably favour re-investment of funds rather than high dividends and his capacity to judge subordinates may have been developed when a foreman or supervisor. Full marks may be given for re-investment and one mark for appointments.

VI. A TECHNICIAN OR OTHER SPECIALIST TRANSFERRED TO THE WORK OF GENERAL ADMINISTRATION. By such a 'technocratic' system an engineer may, for instance, take charge of a whole engineering business. This type of administrator is becoming more frequent, has been enthusiastically advocated,² and certainly supplies men trained to think scientifically and to be keen on their work apart from the

¹ *Psychology and Politics*, p. 24.

² See Veblen, *The Theory of Business Enterprise*, *passim*.

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salary they obtain. But the ex-technician may be unfamiliar with the work of the specialists in other techniques whom—under a functional or staff-and-line management—he is called upon to co-ordinate, and he may over-emphasize the importance of his own late function as against the other technical divisions (e.g. selling or accountancy) of the large firm's work. This will not conduce to efficient all-round administration under the system of free production for free consumption that is assumed to continue. The technocrat may make a hobby of some invention of his own, thus providing a cheap non-pecuniary incentive to his work, but interest in a few gadgets may distract him from his function of general management and when the business is on a large scale, all his time should be needed for generalship. The ex-technician is likely to over-emphasize quality at a high price at the expense of quantity at a low price and be unwilling to expand business on mass-production lines even though the total net revenue of the firm would thereby be increased. He prides himself as a purist not a vulgarizer, and his supply price tends to be inelastic like that of the family head, though due to technical rather than social conventions. He therefore gets no marks for co-ordinating efficiency and low marks for expansion into large-scale operation.

On the other hand, the technician's mental attitude is likely to be favourable to capital re-investment, for he will see clearly the technical possibilities, and he may not be averse to association and amalgamation with other firms. His knowledge of men is not likely to be great and his judgment of abilities in others somewhat doubtful. For these reasons a high mark is assigned for re-investment, one mark for co-operation, and none for efficiency in appointment.

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VII. Finally, there is a new type of administrator emerging, one TRAINED SPECIALLY TO ADMINISTER. Not one of the six types hitherto listed, it will be noticed, has more than 'picked up' the skill and knowledge necessary for his work. The entrepreneur type has learned if at all by experience; the head of the family type is almost an amateur, while the financier, the extraneous director, the ex-foreman and ex-technician, have all either learned trades different to that of administration, or no trade at all. In the type of administrator now under consideration the work of administration is at last considered as seriously as that of a profession. A physician undergoes six to ten years' training, a lawyer passes examinations before he is admitted, a teacher attends for two years at a training school, a civil service administrator is picked by competitive examination from university graduates of the highest academic attainments. Why should a business administrator not also require selection, education and training? Large-scale operation and organization certainly call for as much mental ability, knowledge, and thought in weighing pros and cons as any of the liberal professions. Learning and 'weathering' by experience is required in addition, but this is no less true of the medical practitioner, or the lawyer, or the teacher. It is not suggested that the university graduate who has taken, say, a commerce or economics course should be forthwith appointed general manager. It is not a question of training versus experience; but a choice between training plus experience and mere experience.

The new trained administrator type therefore has not only had a University education but has been accepted by some business firm for the express purpose of training him by giving him experience

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in various positions on the management side. He may first be placed in the actual workshops, or on a salesman's round, later in a works supervisor's or regional sales manager's office, later still in the head office; but all the time the object is not so much immediate service but training for ultimate service as a general administrator.

What are the reactions of the trained administrator likely to be to the five major problems of large-scale administration; how efficiently will he answer them, and how cheaply can efficient work be obtained from him?

To begin with the cost of his services per unit of output. Since he has deliberately chosen business administration as a profession and has been trained for efficiency therein, it is likely that the trained administrator will find a certain interest and pleasure in the successful performance of his work. He will not have to be heavily 'bribed' to engage in otherwise repugnant activities. Nor with his view of business administration as a profession will he regard his work as dishonourable, and exact further pecuniary compensation for overlooking honour. On the other hand, the trained administrator will be a salary earner and have the disposition to play safe common to other types of salaried administrators; indeed the chief danger to efficiency is that like the trained civil service administrator, he will become a bureaucrat fixed in his habits and rules and conventions. He will not have the incentive of profits to spur him on to additional efforts and new adjustments when these are called for, though university education should give him more versatility than, say, the ex-foreman type.

The trained administrator is likely to be an efficient line and staff co-ordinator for his practical training

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has introduced him to the work and difficulties of all the specialists now under his command and his theoretical training has familiarized him with 'paper' methods of control. On the other hand, he may be lacking, as already suggested, in initiative. He may realize the superior efficiency of large-scale operation but not have the drive to carry new schemes through. In making appointments, too, his judgment may be faulty; neither formal university education nor practical training can ensure an accurate valuation of other men. For co-ordination, initiative and appointments the marks assigned should therefore be 2, 1 and 1 respectively. Considering the problem of co-operation or competition with other businesses, the trained administrator is not likely to be biassed in favour of maintaining the independence of the 'good old firm'; on the contrary there is likely to spring up a sort of camaraderie between all trained administrators whatever firms they are administering and temporarily tied up with. The common interests of the whole industry is thus likely to obtain a favourable consideration and schemes of rationalization are likely to be furthered. The problem of the disposal of gross profit is also likely to be decided in favour of more rather than less re-investment, since the trained administrator has no more of a purely capitalist proprietary outlook than other salaried administrators. High marks may therefore be assigned to the trained administrator on the score of co-operation and re-investment.

§ 3. *Short-period Supply Price of Administration*

The theoretical conception of the supply price of the factors of production may now be considered, as it applies to the factor of administration, in the

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light shed by the realistic analysis of types of entrepreneur and administrator.

It is usually assumed by economists that a higher rate of pecuniary remuneration will induce more work to be done by labour. This we have shown may not be the case if the labourer has a fixed standard of living and does not wish to increase his total earnings. In that case a higher rate of time wage will induce him to work less time and a higher rate of piece wage to make fewer pieces. When saving is being discussed this possibility is always admitted by economists, its first discovery being attributed to my great uncle, William L. Sargent.¹ If the saver wishes merely to have a fixed income in the future then a higher rate of interest will induce him to save *less* principal. But when it comes to the entrepreneur or administrator no such Sargent's law is admitted. To quote Mr. Keynes ² :

“When the actual rate of entrepreneurs' remuneration exceeds (or falls short of) the normal, . . . entrepreneurs will . . . seek to expand (or curtail) their scale of operations at the existing costs of production.”

Expressed diagrammatically as in Table VIII the assumption is that when the OY axis measures the rate of remuneration per unit of output and the OX axis the amount of output produced, then the supply curve will rise from left to right (as Curve AA) since the higher the rate of pay the more is produced.

Yet undoubtedly there are types of entrepreneur particularly of the family business type who have just as much of a fixed pecuniary standard or fixed income standard in their minds as certain types of labourers or savers; and with increasing rates of

¹ Marshall, *Principles of Economics*, IV, vii, § 9.

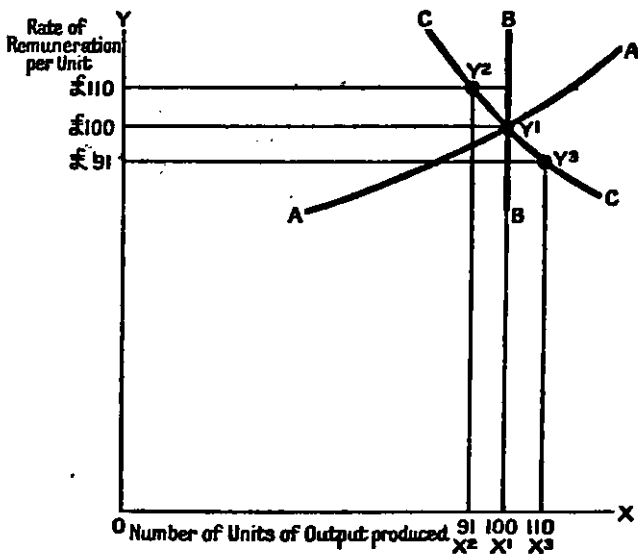
² *A Treatise on Money*, Vol. I, p. 125.

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remuneration—they may restrict their output and activities in precisely the same way.

At the time when the English classical economists were laying the foundation of economic theory, the capitalist entrepreneur does seem to have been a regular hustler, at any rate in England. Say, the French economist, was filled with wonder at the

TABLE VIII—THE SUPPLY CURVES OF ADMINISTRATION



intense restless energy of all classes of Englishmen. "Everybody is absorbed in his own affairs," he wrote. "Those who allow themselves the slightest relaxation in their labours are promptly overtaken by ruin." But at the present day foreign observers find a different state of affairs. M. Siegfried¹ considers that—

"it was about ten or fifteen years after the War of 1870, at a time when German economic rivalry was just begin-

¹ *England's Crisis*, p. 22.

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ning to be felt, that the English drifted into the way of arriving late at work and leaving early. The week-ends were surreptitiously extended—Saturday mornings and even Monday mornings were lost. In the Far East, where England's position was soon to be attacked, English stores were the last to open, and somehow seemed to shut again almost immediately. . . . Prodigality became a distinct trait in the British character, not to mention a subtle trace of laziness."

Even in Ruskin's day the ideal standard of living of the business man which he described in the Town Hall of Bradford¹—presumably to a knowing audience—appears distinctly static and inelastic.

"Your ideal of human life then is, I think, that it should be passed in a pleasant undulating world, with iron and coal everywhere underneath it. On each pleasant bank of this world is to be a beautiful mansion, with two wings; and stables, and coachhouses; a moderately sized park; a large garden and hot-houses; and pleasant carriage drives through the shrubberies. In this mansion are to live the favoured votaries of the Goddess; the English gentleman, with his gracious wife, and his beautiful family; always able to have the boudoir and the jewels for his wife, and the beautiful ball dresses for the daughters, and hunters for the sons, and a shooting in the Highlands for himself. At the bottom of the bank is to be the mill; not less than a quarter of a mile long, with a steam engine at each end, and two in the middle, and a chimney three hundred feet high. In this mill are to be in constant employment from eight hundred to a thousand workers, who never drink, never strike, always go to church on Sunday, and always express themselves in respectful language. Is not that, broadly, and in the main features, the kind of thing you propose to yourselves? It is very pretty indeed, seen from above."

I do not wish to criticize this ideal, or to blame the business man for valuing leisure and distributing his time as seems best to him. He is no doubt

¹ *The Crown of Wild Olive*, Lecture II, published 1866.

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following as far as in him lies the Greek philosopher's ideal of the Good Life and, as Ruskin says, it is very pretty. But the implication of his behaviour should not be missed by the economist. It is rash to assume, at any rate in England to-day, that pecuniary incentives will stimulate every type of entrepreneur or business administrator to additional work. The static philosophy of the aristocrat and gentleman is (by a process that will be described in the next Chapter) gradually pervading the twentieth-century bourgeois particularly through the medium of the English 'Public Schools'. It is important, therefore, to set forth somewhat precisely the economic significance of this mental attitude.

If, owing to general prosperity or a greater demand for their products, the net revenue of certain firms appears likely to rise, the reaction of certain types of business leaders may be (1) to pay no attention and carry on as before or (2) actually to restrict operations. The technician type who is keen, like the medieval craftsman, on the limited production of a well-wrought article may be impervious to any economic stimulus, may continue to 'class' produce rather than 'mass' produce, and may neither increase nor decrease the amounts of output. Together with all types paid by fixed annual salary (Types V, VI, and VII), he will not tend to be quite so alert to the new possibilities in expansion as the classic entrepreneur who would reap all the extra profit of such expansion; for the additional net revenue would not immediately accrue to these salaried types but would swell the dividends of the ordinary shareholders. And the shareholders, as was explained in the last chapter, are ignorant of the possibilities of expansion. They are liable to be satisfied, or at least not to protest, when divi-

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dends are maintained in happy ignorance of the fact that their dividend might have been much higher. There is, then, in modern organization a distinct liability of a failure of the pecuniary stimulus to act in such a way that the more the rate of remuneration the more the amount produced. The supply curve will tend to the perpendicular as curve (or, rather, line) B in Table VIII.

But there is a further possibility, namely that the curve may actually be the reverse of that normally assumed, as curve CC in Table VIII. Some entrepreneurs, particularly of the head-of-the-family type, and some directors, too, may feel, when their income or the shareholders' income appears likely to rise considerably above a given standard, that they can relax their efforts and spend more of their time in well-earned rest and leisure. They will not be so keen to obtain new business and will be less pushful in their salesmanship, making little effort to cut down prices. Hence their output will not expand with expectations of increased remuneration for themselves or the shareholders but may actually contract. Suppose the head of a certain business normally making a hundred units of output looks upon £10,000 a year (obtained by charging a £100 profit on each unit) as ample for his 'needs' and is disinclined to work any harder for extra remuneration. Then if he finds that at the old price he will be selling more than a hundred units and thus will be involved in the additional trouble of organizing and directing their production, he may well raise the price and with it his remuneration per unit, so as to keep sales and production at 100 units. He may even reduce sales and production by that proportion which (at the higher price per unit) will just keep his standard income of

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£10,000, and yet allow him more leisure or additional holidays. His original rate of remuneration was £100 per unit, Y^1X^1 in Table VIII. If he is now able to get £110 profit on each unit, the desire merely to maintain a standard income will prompt him to reduce output from 100 to 91 units. Thus his payment per unit is raised from Y^1X^1 to Y^2X^2 in Table VIII—his supply price is higher, without stimulating him to expand business, in fact stimulating him actually to contract from OX^1 to OX^2 . The higher supply price may of course in the long period attract further supplies of entrepreneurs and administrators into the industry, or stimulate existing entrepreneurs and administrators in other industries to add the goods and services concerned to their line of production; but this assumes an availability and mobility of brains and resources that will be discussed in the next section.

The reversal of the supply curve normally assumed, whereby the curve CC equates the rectangles OY^2 and OY^1 , may persist if (owing to general business depression or a lower demand for the particular products with costs of raw material and other factors maintained) the income of some entrepreneurs appears to them likely to fall considerably below the standard they have budgeted for, or the income of the shareholders below what they will stand. Then entrepreneurs and directors may feel called upon to bestir themselves to restore their income to the normal. If they cannot cut costs they will go 'all out' to retain old business or find new business to replace what is lost, and will push sales by cutting prices or engaging in advertising campaigns. If the entrepreneur with £10,000 a year as his standard expected income finds his actual income seriously threatened, he may be willing to

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take on 10 per cent additional production by charging a much lower rate of remuneration per unit of output than normal. He may expand production by 10 per cent to OX^s in Table VIII and keep his standard income of £10,000 by reducing his own remuneration per unit from £100 (Y¹X¹) to £91 (Y^sX^s). For £91 × 110 is approximately £10,000.

Economists, with the exception of Marshall,¹ have been somewhat vague as to what they meant by a 'rate', when speaking of the entrepreneur's remuneration. We have hitherto taken rate to mean actual money obtained *per unit* of output, since this is the form in which the economist's 'supply price' is usually reckoned. But it may be objected that the entrepreneur reckons his remuneration as a *percentage* on his sales values or his capital, not on an absolute actual sum of money per physical unit of output. In actual fact I believe the calculation usually to be on a time rate. Even the entrepreneur of Type II (and many of Type I) simply reckons to make such and such a sum per annum in profit, often paying himself a 'salary'; and with the increasing number of salaried general managers (Types V–VII) the time basis in business administration is clearly gaining in importance. But the difference between the salaried administrator on the one hand and the entrepreneur (self-made or family head) and the fee'd director is this, that whereas the entrepreneur's and the director's time is his own and he can if he likes increase his leisure at the expense of his working time, thus producing a reversed supply curve, this voluntary adjustment is impossible for the hired administrator.

The reaction of the several types of entrepreneur or administrator, distinguished in the previous sec-

¹ *Principles of Economics*, Book VI, viii, § 1.

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tion, to variation in entrepreneur's rates of remuneration may be summed up :

- (1) There are types of dominant business chiefs whose income consists in the entrepreneur's remuneration and is immediately and directly linked with the output of the firm. When additional income is in sight as a result of additional output, some of these (A), like the self-made entrepreneur, work harder. Others (B), like some family heads and some extraneous directors, will tend to work less hard. They have fixed standards of income and other occupations to attend to and above a certain point their demand for income in terms of effort is inelastic.
- (2) Other types of dominant business chiefs, particularly the financier, have an income in the form of speculative margins of profits not immediately and directly linked with the output of the firm, but varying with the market value of its shares. In so far as the expectation of increased remuneration by increased value of shares depends upon increased output, the financier is likely to work harder in the form of selecting more efficient salaried administrators. Which brings us to
- (3) The further types of dominant business chiefs who have an income in the form of a salary that is only remotely linked with the output of the firm.

The question naturally arises which of these three sorts of reaction is the more frequent among the key men that ultimately control industry. A direct answer would involve an analysis of the total output and services of the country according as they were provided under the control of the several types of entrepreneur or administrator ; and we may suggest an enterprise of this sort to any budding statistical economist not unmindful of his country's prosperity. He certainly will not be duplicating any other investigator's work. At present, however, it is impossible even to give an approximate estimate of the results of such an analysis. We may, how-

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ever, hazard a guess at the *changes* that have taken place in the comparative aggregates of business controlled by men of different reactions.

Most of nineteenth-century business was probably controlled by the self-made entrepreneur working harder when increased rates of remuneration were in sight, but toward the end of that century many of the businesses that had developed earliest had fallen into the hands of the sons or the grandsons of those self-made pioneers. In short, a greater proportion of business became controlled by family heads merely because they were heads of families. This was probably true of the business of banking and such large-scale manufacturing industries as iron and steel and coal mining, even though in form they became joint stock companies; and the family control continues to prevail in many of the smaller, but old-established industries, such as pottery, carpet, boot and shoe, and the older branches of engineering. It is possible that the relative decline in British industry between 1880 and 1930 when compared with that of other industrial countries has been due to the large proportion of its output controlled by the restrictive reaction of family heads.

The post-war era is, however, showing signs of a further transference of control. The importance of the family business in the total of national trading is probably waning, and that of the salaried administrator, often employed by financiers and extraneous directors waxing. The large doses of rationalization that have been quietly swallowed, particularly during the depression of 1930-3, have involved the pensioning of family veterans, and the passing over of the less promising heirs. With the proportionately increasing volume of business falling into the hands of

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public joint stock companies and combines of various sorts,—multiple restaurants and chain-stores, for instance, taking the place of independent shops, motor-coach companies of the independent bus enterprise,—less business is likely to be under the control of the self-made entrepreneur and more under the other types of administrator. With the proportionately increasing volume of business nationalized or municipalized the salaried ex-foreman, technician or trained administrator types are automatically likely to gain ascendancy. And with a proportionately increasing volume of business transacted by consumer's co-operative societies, the ex-foreman or ex-clerk type (which is almost exclusively the type of manager here employed) is also likely to gain in importance.

The general result is that, in the short period, existing businesses are not so likely to seize their opportunity of expansion during prosperity, or to adjust themselves by contracting during a depression as in the period when the entrepreneur was the most frequent type of administrator. Sir Arthur Salter¹ puts this plainly :

“ When most of the output of the world depended upon the individual effort of small manufacturers, who were unable to continue after prices ceased to be profitable, output adjusted itself rapidly to any reduced demand. The same force does not always operate so imperiously or so rapidly upon the financially powerful organizations which now control most of the basic industries of the world ; they can and often do continue without abatement to augment stocks which they are able to finance for a future hoped-for market.”

It is probably true that the salaried administrator has not the same keenness to expand output when

¹ *Recovery*, p. 30.

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the remuneration of enterprise may be expected to rise, as the first-generation entrepreneur. On the other hand, compared with the family business era, we may expect less output restriction as the typical reaction to the chance of higher remuneration, and salaried administrators have these economic advantages that their services may be obtained relatively cheaply and that in answer to the expectation by financiers and directors of higher return to enterprise more of their kind may be easily called in. This possibility depends on two conditions: (1) That the financier, the extraneous director and the salaried administrator actually in the saddle shall not be blind to the efficiency of potential administrators in subordinate posts. (2) That efficient potential administrators shall be available in sufficient quantities. At present the high cost of the sort of education that is considered desirable in salaried administrators, adds to their salary an institutional rent; this high salary in turn sets up a high conventional standard of living among administrators to which the salaries of new accessions must conform. A vicious circle of high costs of administration is thus set up that is probably unnecessary. Undoubtedly salaried men of equal ability are obtainable for industry much cheaper on the continent of Europe than in England; and some attempt to break the vicious circle must be made if competition with foreign businesses is to be more successful. One type of salaried manager—the ex-foreman—has, it is true, fairly modest requirements; but it remains to moderate the salaries and fees required by the administrators more suited to large-scale industry, the ex-technician and the trained administrator, as also the extraneous director. This could be affected in the usual way by increasing the

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available supply of capable administrators. We may, therefore, turn to the question of what long-period supply price is actually necessary to attract new administrative ability; in particular, how far the present scale of remuneration in industrial administration compares with that of professions requiring similar ability.

§ 4. *Long-Period Supply Price of Administration*

To obtain efficient supplies of administrators the pecuniary remuneration must not only give an incentive to work, but, as shown in the analysis of the labour supply, must also provide an attractive power. Output is not increased only by the increased efforts of the existing administrators, but if a sufficiently long period is allowed, by additions to the number of administrators. How far new administrators can be attracted into industry will depend on the comparative earnings of administrators, and such earnings must, therefore, be compared with those of occupations likely to attract the same type of person. If industrial administration is to be regarded as a profession, then its pecuniary remuneration may be compared with that of other professions (just as the 'efficiency earnings' of labour in different occupations are compared ¹) with reference to the exertion of ability and efficiency that is required. Unfortunately little information is available as to the remuneration of administrators even where, as in Types V, VI, VII, administration is paid for by a definite salary. Recently, however, the Association of First Division Civil Servants submitted a *Statement to the Royal Commission on the Civil Service (1929-30)* in which an attempt was made to sum-

¹ Marshall, *Principles of Economics*, Book VI, iii, § 2.

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marize the salary scales offered, by several large business houses in different industries to their administrative and commercial staff recruited from the Universities.

RAILWAYS.—The career offered to the higher grade entrant of an ability to reach emoluments of £1,000 a year at some age between 30 and 40 is such as to allow of a proportion much above 52 per cent of such entrants reaching posts worth £2,000 and over, and of a proportion much above 26 per cent reaching posts worth £3,000 and over.

SHIPPING.—Sir Alan Anderson stated that his firm (the Orient Line) recruit university entrants, but only when they expect that they will at an early age reach responsible positions. Sir Alan considered that a university man would feel that he was getting on satisfactorily in business if he was making about £2,000 per annum somewhere between 30 and 40 with prospects of more in the future.

FINANCIAL HOUSES.—In the financial house investigated, a university entrant might expect £1,500 per annum by about age 35 as a minimum and might in the thirties rise to £5,000 a year. At a later age the chance of earning £5,000 a year appeared large, and the risk of earning less than £2,000 a year small.

INDIAN MERCHANT FIRMS.—Making due allowance for the cost of living in India and the additional inducement necessary to attract men to serve there, the career offered by such firms allowed of a high proportion of university entrants obtaining between ages 35 and 40 emoluments equivalent to employment at home at rates between £2,000 and £3,000 a year.

THREE LARGE INDUSTRIAL (MANUFACTURING) CONCERNS.—A substantial majority of the university entrants on the administrative and commercial sides of three important firms can reach emoluments of £2,000 and over, by the early forties, and by the age of 48 a proportion largely in excess of 30 per cent can reach £3,000 and over.

A WORLD-WIDE BUSINESS.—Data as to such of this firm's university entrants as are employed in its Indian

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branch showed that, making all allowances for the inducements necessary to attract men to serve in India, the economic equivalents for employment in England of the emoluments drawn by its university entrants in India were :

Average Age.	Average Emoluments.
30	£1,000 per annum.
39	£1,800 per annum.
42	£3,000 per annum.

BANKING.—Here men were recruited direct from school and not through the universities. One of the principal joint stock banks employs 84 ‘managers’ at its head office, and 55 inspectors. For all bank] clerks who are selected for one or other of these types of post, the average expectation at the age of 50 and over was of gross emoluments of over £2,000 per annum.

Comparing these administrators in industry with men in liberal professions, it appears from the *Statement* that in the case of solicitors a university man of ability and of suitable personality entering the profession, should ten years after admission be earning £1,000 a year, and by the age of 38 to 40 should be earning not less than £2,000 a year. In the case of doctors—“there seems no reason to doubt that a fully employed panel doctor in a populous area using half his time for panel and half for private practice can make £1,400 per annum free of expenses. This income does not vary with the doctor’s age ; he can earn it throughout the whole of his working life after, say, 35.” Harley Street specialists and consultants would, of course, have the opportunity of earning much more.

One other profession not mentioned in the *Statement* may be considered. In university teaching, the salaries of professors who are heads of departments, seldom rise above £1,200 ; even when supplemented by external examining fees and royalties from books,

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more than a total income of £1,500 can hardly be achieved at any age.

Between the ages of 30 and 40, when they have really completed their training and 'weathering' by experience, University graduates of suitable ability may expect the following remuneration as administrators in various industries :

Shipping	£2,000.
Financial House	£1,500 to £5,000.
Indian Merchants	£1,000 to £3,000.
Manufacturing (in 'early forties')	£2,000.

In the liberal professions on the other hand, the remuneration to be expected at similar ages for similar training and gifts are lower.

University Professors	£1,000 to £1,500.
Solicitors	£1,000 to £2,000.
Panel Doctors	£1,400.
Civil Servants (all ages 34 upward)	£1,390. ¹

In Table IX the actual number and percentage of administrative posts in each of three salary classes is compared in three industries, (manufacturing, railways and banking) with the actual number and percentage in the same salary classes in the Civil Service.²

It is evident that the incomes, actual and prospective, of the growing numbers of professional administrators in industry compares favourably with those of persons having at least similar abilities in the State Civil Service, and the legal, academic, and medical professions. It should follow, if men were guided chiefly by pecuniary attractives, that industry will secure the highest grade of ability in its administrators. Nor does there at first sight appear to be

¹ *Statement to the Royal Commission*, p. 55.

² *op. cit.*, tables, pp. 57, 59, 62.

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TABLE IX

COMPARISON OF NUMBERS AND PERCENTAGES EARNING SPECIFIED INCOMES AMONG CIVIL SERVANTS AND BUSINESS ADMINISTRATORS

Income per Year.	Civil Service Administra- tive Class.	Three Large Manufac- turing Firms.	Two Railways.	Bank.
£1,000-£1,999 .	542 94%	421 70%	279 76%	279 91%
£2,000-£2,999 .	20 3%	94 16%	44 12%	16 5%
£3,000 and over	18 3%	82 14%	42 12%	12 4%
Average Gross Income of men in over £3,000 Class . . .	£3,400	£4,370	£4,346	£4,340

any obstacle to such attraction on the side of pecuniary inability. The will to enter or transfer into business administration is not blocked by any apparent need of an elaborate education, or of the cultivation of manners and correct intonation, such as confront the doctor, the lawyer, or the University teacher. In the terminology already applied to labour, the pecuniary 'conducives' enabling any person to become a business administrator do not appear important. The self-made entrepreneur has come to the front by outbidding and outbargaining his rivals without much educational apparatus or early pecuniary endowment, and the ex-employee type of administrator has also been promoted to greatness without pecuniary conducives.

Nevertheless, the pecuniary conducives to administration must not be neglected. Even in the case of the self-made entrepreneur and the ex-foreman or ex-clerk, poverty in early life would probably eliminate all potential business chiefs who did not combine

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with the necessary administrative qualifications an iron constitution able to resist the inroads upon a low diet, of long and arduous hours of work climbing the lower rungs of the ladder. And in the case of the other types of business administrators, most of them more adapted to large-scale highly organized industry, the supply of administrative ability depends clearly either on the ownership or control of capital or a relatively expensive education. The supply of family heads available in the future is limited naturally by the number of business families, and the rapidly declining birth-rate among such richer families. There remains the financier, and the guinea-pig and interlocking director type who, by definition, must own or control pecuniary resources, or at least have influence; and there remains the ex-technician, the ex-professional man and the trained administrator, all of whom have by definition to undergo a long education.

In short, difficulties do appear in attracting able but impecunious young persons into business due to the lack of pecuniary conduces to mobility out of the poorer strata. There are, too, certain non-pecuniary psychological and sociological attractives pulling young people away from business as a career, such as the dull life and hideous aspect of industrial towns; and certain non-pecuniary anti-conduces *disabling* them from becoming true administrators, such as the narrow routine to which they may be held instead of being granted varied experience and some early responsibility.¹ Though a potentially efficient business administrator might re-act successfully to the pecuniary and non-pecuniary incentives offered him, and be attracted to business and away

¹ See Bowie, *Education for Business Management*, especially pp. 126-31.

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from other pursuits by the high pecuniary salaries, he might remain merely a potential force because there were non-pecuniary distractions, and/or because he has not been *enabled* mentally and socially to enter upon a business career, or to work efficiently when he had entered it.

In the case of labour, non-pecuniary distractions are largely the result of conventional modes of thought unaffected by education, and anti-conducives are largely of the physical order. A labourer cannot move from one occupation to another for lack of transport or housing, he cannot work efficiently because of lack of sufficient food or excess of working hours. But in the case of administration, the nature of the non-pecuniary distractions or attractions, and the nature of the conducives to entrance and efficient work in that career are influenced so greatly by education that they will be considered in a separate chapter under that heading.

CHAPTER VIII
EDUCATION FOR BUSINESS
ADMINISTRATION

§ I. *The Requirements for Administration*

TO have discussed education for management fifty years ago would have been thought grotesque. Management, as such, hardly existed. There were entrepreneurs, proprietors, partners—business men generally; but management was merely an incident, almost a side-line, in the work of those industrialists. To be educated for that side-line, was preposterous. You were either born to a great business as the son and heir of a family concern, or you achieved greatness by successful competition against rivals, or you had it thrust upon you by promotion from the ranks of clerks or foremen. You never trained for the management of business as you trained for the law or the church or medicine. In short, management was not a profession.

With the increasing size of firms and their transformation into joint stock companies, a devolution of function has taken place. The capitalist-entrepreneur has in many firms been split like the atom, and in his place are found the private investor, speculative or gilt-edged; the trustee-director with a seat on the board but exercising no continuous supervision; and, finally, the full-time manager or managing-director and his general staff.

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It is education for the new salaried professional manager or managing director (of ex-foreman, technician or trained administrator type) that will here be chiefly discussed ; but the continued existence of the old entrepreneur and family head types will not be ignored, nor the requirements for administrative control on the part of financiers and other directors. The new requirements for the administration of the new forms of industrial structure may perhaps be summed up under the word generalship. The head of a business must not only show the old enterprise but must be capable, too, of co-ordinating the work of subordinate specialists and of exercising general control over the captains, majors, and even colonels under him. In a large firm there arises such a hierarchy of line and staff officers, that a captain of industry is really very small fry !

The earlier small-scale capitalism in which small bands were led by independent captains in a sort of guerrilla warfare competition against each other, is a very different affair to the large-firmed capitalism of to-day, where there is so much specialization within the firm that higher and higher ranks have continually to be erected to co-ordinate newly formed special departments and functions. So much has been written in praise of specialization and division of labour since Adam Smith, that this necessity for 're-co-ordinating' the parts divided up must always be emphasized. If A makes the head of the pin, and B the shaft, someone has got to see that the heads and shafts are produced in equal numbers by a given date and at a given place. The common factor of administration or management in its wider and narrower meaning is, in fact, this very counterweight to specialization. There must be specialized technicians, engineers, chemists, metallurgists ; but

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management consists in integrating the work of these specialists for the final purpose of industry—to complete and sell the goods.

This new industrial generalship makes new requirements of human faculty. The job demands, first, the ability and will to command and control large organizations. These requirements may be summed up as the *powers of co-ordination*.

At the same time the requirements of the old entrepreneur still subsist. The new 'general' of industry must have the urge and ability to invent and initiate. He must have ideas about possibilities—imagination, for instance, about possible customers' possible wants or tastes in design. He must be prepared to take risks and must possess resourcefulness in adapting the means at his disposal to secure the fruits of his imagination. These requirements may be summed up as the *powers of initiative*.

Finally, the combination of the new requirements of the large firm with the old requirements of the original entrepreneur, set in a new world of science, will require great intellectual capacity coupled with great enthusiasm and zest for work. Planning ahead now requires abstruse thought, digestion of paper records and reports, and scientific inference.

In the nineteenth century Ruskin thought ¹ " that the tact, foresight, decision, and other mental powers, required for the successful management of a large mercantile concern, if not such as could be compared with those of a great lawyer, general, or divine, would at least match the general conditions of mind required in the subordinate officers of a ship, or of a regiment, or in the curate of a country parish ". In the twentieth century the growth of the large mechanized and functionalized concern requires

¹ *Unto this Last*, Essay I.

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for its control somewhat more than the powers suitable for a country curate. The co-ordination of subordinate technicians, accountants and salesmen implies judging the reports and advice received from them and then directing them in accordance with the judgment reached. This judging requires a knowledge of the principles of their craft sufficient to 'check up' on their recommendations, and a scientific method able to isolate factors and 'see the wood for the trees'. And the subsequent *direction* of subordinates requires a power of generalization not always possessed by the untrained mind. Trained civil service administrators are often surprised by the difficulty the untrained business man finds in applying general principles. He is unable to class individual cases under general headings and thus will bother himself making new decisions about subsidiary details that he should have arrived at almost automatically.

Of these three requirements of modern administration the powers of co-ordination and initiative are particularly important for the chief or directing manager, but the power of intelligence is equally important to his general staff. While the chief may to some extent co-ordinate and supply initiative to his subordinates, he cannot supply intelligence and must here be met half-way.

§ 2. *Education and Inborn Qualification*

The question must now be met whether modern education in the widest sense of the word is likely to prepare men for the new tasks of industrial administration. Will it give men the powers of co-ordination, initiative, and above all, intelligence? Will it supply not only ability to co-ordinate, initiate and

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think, but also the willingness, the urge, the zeal to do so ?

An educationalist is naturally inclined to claim too much for what education can do. He should start by reminding himself of what education can NOT do. Men are born unequally gifted, and while education can develop what gifts there are and compensate perhaps for the lack of other gifts it can never entirely change this inequality. There is an unalterable distribution of mental and temperamental abilities just as there is an unalterable scatter of physical characters, and however much he takes thought and lecture courses, a man cannot add more than a certain amount to the stature of his powers.

But what education can do to fit men for the requirements of any type of work is to supply non-pecuniary attractives and inducements, first, to see that men with the required inborn abilities, instincts and temperaments will find their way toward the appropriate work, will be attracted to it and not distracted from it; secondly, that they will be induced to perform that work apart from pecuniary incentive with pleasure and without friction; and last (and also, possibly, least) that they will be *able* mentally to perform the work. In citing three powers as particularly required for modern business administration, that of initiative, co-ordination and intelligence, the word powers is used deliberately to cover both ability and willingness. What proportion of children that are born are ever likely to have the powers—abilities *and* willingnesses—within them that are required of modern management ?

I am inclined to take the required combination of powers as somewhat scarce and to assume that perhaps only one child in fifty can ever make an efficient manager however successful its education. If that

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is so, the practical purpose of education from the standpoint of management is to *attract* the one child out of fifty that is born potentially able and willing into management, or at least not to distract it therefrom; and to develop that inborn ability and willingness by providing the necessary (conductive) equipment and non-financial incentives.

§ 3. *Education versus Inbred Disqualification*

But here another limitation of the scope of education must be admitted. A boy or girl does not grow up *only* at school or college: he or she (whatever the inborn powers) is subjected to all sorts of home and social influences, unconnected or only incidentally connected with the educational system. He or she will first of all be affected by the economic conditions of the home. The child of the poor will be cramped in housing and the facilities for studying and developing freely and, at the very time when its growing body wants careful feeding, will be competing with equally dependent brothers and sisters for a food supply limited in quality and quantity. Thus, however suitable their education may be for the profession of administration, two-thirds perhaps of the poor born able and willing, may never develop a sufficient basis of stamina and physical vitality. Since the poor form at least three-quarters of the community, it follows that half (i.e. two-thirds of three-quarters) of our assumed one-in-fifty potential managers may thus be lost. From a 2 per cent of possibles we have already dropped to 1 per cent.

Education has thus to contend against the unequal natural distribution of powers and the unequal economic distribution of opportunities of developing these powers. But even where poverty is not an

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obstacle, there will be a further psychological set of factors to contend with. Children will discover that certain things are *not* the thing and certain deeds '*not done*'. These views will profoundly change their inborn ability and willingness, and by modifying their ambitions will attract or distract them in all sorts of ways. Many of these '*dont's*' will certainly tend against the attraction and development of able and willing managers required in industry to-day. Since parents are necessarily a generation behind, sentiments will be inculcated and habits imitated unsuitable to the requirements of the modern age. These parents were influenced by their parents, and those parents by their parents and so back and back into the mists of history and pre-history. Thus a great mass of traditional lore has accumulated that profoundly affects the outlook and mental attitudes, and forms a set of conventions that may lag centuries behind the needs of the time.

§ 4. *English 'Breeding'*

Education in the strict etymological sense of the word implies a 'leading out' of people. But leading out of what? The standpoint I shall adopt here—I do not say it is the only possible interpretation of the matter—is that education is an attempt to lead people out of the rut of conventional and traditional 'breeding' and outlook. When education is mentioned in relation to industrial management (though not necessarily in other contexts) the purpose of this 'education' will be to introduce attitudes more in consonance and harmony with the realities of modern industry. The fact must be faced, for instance, that England is now engaged in intense competition with other manufacturing countries and is no longer, by

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some divine dispensation, *the* 'workshop of the world'. Failure continually to increase in efficiency, as England's rivals are doing now, means loss of business at home and abroad. In the old days the English producer could adopt the attitude of 'take it or leave it' and the foreigner for want of substitutes had usually to take it. Here, definitely, is a need for the sort of change in attitude that education implies. But this is merely one illustration. Business attitudes are not watertight compartments safely separated from the rest of a person's general outlook; and if producers are to face the competition of the world they have, I believe, to emerge—to get 'led out'—from certain general states of mind that at present pervade the community.

What peculiarities of traditional and conventional outlook are there among the English that particularly strike the intelligent foreigner to-day? Among the many books on England that have recently appeared from the (often sympathetic) pen of Frenchmen and Germans, we may single out the peculiarity the Germans call the ideal of the gentleman—*Das Gentlemanideal*.

The ideal of the gentleman appears in many manifestations of English life and manners, but from the standpoint of business administration it has several particular consequences.

First of all, the old tradition is that the gentleman does not engage in business *at all*. He is above profit seeking and as he does not soil his hands with manual toil so he does not soil his soul with trade. In England traditions die slowly and though this view is now seldom openly expressed as it was a century ago, it continues to affect men's behaviour to-day. Jane Austen had no qualms when writing in *Emma* of Mr. and Mrs. Cole that "they were very good sort

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of people, friendly, liberal, and unpretending ; but, on the other hand, they were of low origin, in trade, and only moderately genteel". Though "in fortune and style of living" they were "second only to the family at Hartfield . . . the regular and best families Emma could hardly suppose they would presume to invite. . . . The Coles were very respectable in their way, but they ought to be taught that it was not for them to arrange the terms on which the superior families should visit them." Little over half a century ago Ruskin¹ pointed out that

"philosophically, it does not, at first sight, appear reasonable that a peaceable and rational person, whose trade is buying and selling, should be held in less honour than an unpeaceable and often irrational person, whose trade is slaying. Nevertheless, the consent of mankind has always, in spite of the philosophers, given precedence to the soldier. . . . Not less is the respect we pay to the lawyer and physician."

Thus a business career fails to exert the attractive power to which its comparative pecuniary rewards might entitle it² because of the non-pecuniary consideration of comparative social disrespect. The superior respectability of the gentleman, who does no work at all, has now enveloped the liberal professions ; and though many modern writers point to the 'romance' of commerce and claim for a business career equal liberality and honour, yet "methinks they do protest too much". When directly challenged this distinction between the gentleman and the business man is usually justified either on the score that business requires little higher education or that business has lower ideals than the professions, that it is 'all out' for money and furthermore merely makes money by 'doing other people down'. At

¹ *Unto this Last*, Essay I.

² See above, Chap. VI, § 3.

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this juncture there is no need to enter into the truth of these contentions. The mere fact that they are generally believed to be true is enough to prejudice the attractiveness of business administration and to that extent to check any increase in the supply of suitable new recruits.

Secondly, if a gentleman, by sheer necessity, has to enter business, he is inclined to foster the notion that he is doing so as a sportsman—and an amateur sportsman—not a player. It is not ‘the thing’ to make business a science and ‘a job of work’. It is viewed as a game slightly amusing but nothing to become over-zealous about, or to work week-ends for, and nothing for which to train the intellect. “The ideal of a gentleman,” writes M. Siegfried,¹ “the foundation of modern British civilization, seems to have contributed to this relaxation of fundamental energy. A gentleman, we must realize, never strives too much; it is not considered the thing. He does nothing too well; he leaves that to the professional and the champion”.

Thirdly, the idea of the gentleman implies the existence of men who are definitely NOT gentlemen, and who, though no doubt they may be sympathized with and given a helping hand, are of a different caste and outsiders. If they attempt as ‘bounders’ to jump the boundary, the privacy of the gentleman must be asserted by various forms of social ostracism and ‘cutting’.

The English town is peculiar in the many blank walls and fences presented to the man in the street, behind which shelter the mansions of the gentry. This is, to quote the English prayer-book, “the outward and visible sign of an inward and spiritual” desire for exclusiveness that does not tend toward the

¹ *England's Crisis*, p. 147.

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smooth working of a large organization of men from different strata of society. There is a barrier to the social 'mixing' and getting together of persons who ought to know one another's point of view and make contacts. Foreign observers, writes Professor Tawney,¹

"come to the conclusion that Englishmen are born with *la mentalité hiérarchique*, and that England, though politically a democracy, is still liable to be plagued in her social and economic life, by the mischievous ghost of an obsolete tradition of class superiority and class subordination, which naturally leads—since intellectual absurdities, however venerable and agreeable, in the end bring their nemesis—to paralysis and confusion in practical affairs. . . .

Here are these people, they say, who, more than any other nation, need a common culture, for, more than any other, they depend on an economic system which at every turn involves mutual understanding and continuous co-operation. . . . And, so far from desiring it, there is nothing, it seems, which they desire less. . . . *Das Gentlemanideal* has them by the throat; they frisk politely into obsolescence on the playing fields of Eton. It is all very characteristic, and traditional, and picturesque. But it is neither good business nor good manners. It is out of tune with the realities of to-day."

This pervasive gentleman-ideal, then, is not a favourable atmosphere for the provision of efficient business administration. It does not tend to supply English industry with men of initiative, powers of co-ordination or intelligence. On the contrary, the ideal gentleman appears to be the man who does the 'done thing' socially, who holds, as Dr. Renier puts it, the "ritualistic conception of life", and whose chief anxiety is lest he may be sinning against the canons of good form; a man who is inclined to be a poor mixer, to be stand-offish not to say snobbish;

¹ *Equality*, p. 30.

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and a man who cultivates a vacant look and a supreme indifference to the intellectual interests of his business.

§ 5. *The English Educational System*

Now for the next question. Does our educational system tend to lead children out from such conventional ideals? On the contrary, taking a general view of the English educational system as a whole, so far from being a corrective of the consequences of the gentleman-ideal, it seems definitely to be based on that ideal and calculated to clamp it down still harder.

1. England is probably the only country in the world where the children of the poor and the children of the rich are definitely separated for purposes of education. All the poor go to the elementary school, a small minority of them proceed to the Secondary Council school, and a very few thence to the older, or, more likely, the provincial Universities. The rich are, first, either educated at home or go to a private preparatory school. Then nearly all of them proceed to a so-called public school, whence at least a goodly minority proceed to a University, usually Oxford or Cambridge. English education as a whole tends thus to intensify rather than to find an escape from class segregation and to make co-ordination of all classes more difficult.

Let us follow the course of English education more closely as it affects the future of industrial administration. Industrial administrators are at present drawn from all classes and are found to have left all sorts of schools at all sorts of stages. There are those who have reached general managership via foremanship, or through ownership of a small but growing indi-

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vidual business, having left elementary school at eleven, twelve, thirteen or (since 1918) at fourteen. There are those who are products of council schools or public schools, and there are those who are graduates of universities either on the technical side or on the arts and general science side, or even—*mirabile dictu*—qualified in special commerce or industrial administration departments.

Of the effect of the elementary school upon those who have proceeded straight from thence into business I am not qualified to speak by experience. But I rather doubt if it has had *any* effect upon their capacity as administrators. All their real education, such as it is, has come after they left their school at whatever tender age they did leave. But the value of such subsequent experience without *adolescent* schooling seems to be becoming less and less certain. Forty years ago, when many of our present successful administrators received only such an elementary education, there was a chance either by apprenticeship, or by the varied experience that a small firm gives, to attain an all-round working knowledge. To-day with specialization of men and specialization of plant, with routine and red-tape, and the hustle of routing and scheduling schemes, the general effectiveness of such a training is more than doubtful. Blind alleys increase, while the road to be traversed, owing to the application of science, is ever lengthening.

It is doubtful, too, whether attendance at secondary school till sixteen (with or without the prize of matriculation) has much effect upon the qualities required for administration. It may make better clerks, better adders, spellers and talkers, but for his education in managership the boy who leaves school even at sixteen must look to a workaday world experience that is ever more difficult to get.

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Three possible courses of systematic education sufficiently thorough to affect administrative powers are left: that of the relatively rich boy leaving his public school say, at eighteen or nineteen; that of the relatively rich boy proceeding to a university after a Public School; and that of the relatively poor boy able to reach the University in spite of his poverty.

§ 6. *The Public School Man*

Of the effect of the Public School I am able to speak from some personal experience. Unlike the case of the Elementary School or the Secondary Council School that is left behind at fourteen or sixteen, there is no doubt in my mind that the years from fourteen to eighteen or nineteen spent at a Public School exert an enormous influence upon adult life. In fact if I were asked by a foreigner what was the most effective institution in the British Isles, I should certainly point to these peculiar Public Schools. Foreigners, like Professor Dibelius, who have made a special study of England,¹ realize the significance of the public schools, but to those unacquainted with English customs it has first to be explained in the words of Professor Tawney² that the English Public School "is not a school that is easily accessible to the public, but a school that the great majority of the public are precluded from entering". Yet in spite of the small fraction of the population possessing a public school education, it is found that among 82 bank directors and 50 railway directors for whom information is available, 53 and 32 respectively attended the fourteen most exclusive Public Schools—in both cases 60 per cent.³

¹ *England*, pp. 463-70.

² *Equality*, p. 96.

³ *op. cit.*, Appendix I.

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I shall make no apology for dealing with the subject at some length.

In the hackneyed expression you 'go through the mill', and this mill of the Public School is certainly effective in turning out a different finished article from the raw youth that went in. Moreover, there is usually a long preparatory process. There are *soi-disant* preparatory schools that, so to say, clean you and card you and slob you—or whatever the Lancashire expressions are—before the real work of the textile mill begins. But I almost think the metal trades more apt in metaphor. The Public Schools cold-press you and stamp you after the preparatory schools have previously blanked you. Anyway, at the end of this long process when a boy is kept away from home two-thirds of the year, often for ten years of the most impressionable age, a standardized product is turned that is quite unmistakably such.¹

What are the qualities of this product of English education? Has the process really educated a boy *out* of the conditions, conventions, and traditions that will handicap him as a really efficient administrator?

Three features may be singled out as distinctive of the Public School. In the first place the close contact of the inmates and the inculcation of a certain tone; secondly, the system of self-government maintained by prefects; and thirdly, the importance attached to games.

Public Schools are continually worrying to keep up their 'tone'—rather a monotone indeed, and the most absurd customs are enforced by physical

¹ It is one of the ironies of English life that those who most stoutly oppose the break-up of the family and standardization are those who do most to bring these results about by sending children away from home at the earliest opportunity to some standard institution.

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caning and moral pressure to keep little boys in their place and make them feel how small they are. All this impresses the very opposite of the powers of initiative required in business. It puts a premium on adherence to etiquette and the slavish following of tradition, and makes any original ideas and behaviour most unpleasant to maintain. It is a Public School ideal to 'play the game', but business inventiveness and imagination imply the thinking out of new games, not just playing the old games with the old rules. The boy who at Rugby first picked up the ball with his hand and thus initiated the modern game of Rugby football no doubt got into serious trouble at the time, even though to-day a tablet stands in the school 'Close' to commemorate the deed.

The prefect system does, I believe, form a training ground in co-ordinative powers. But the power thus developed is that required for the immediate personal supervision of a group of men rather than the more abstract powers of planning required in an administrator of a large works who must spend most of his time in an office away from the actual scene of operation. The Public Schools have been said to turn out admirable mine managers, working below ground in contact with the working force; they are not so successful in providing managing directors who must control and co-ordinate systematically by records and plans the whole administrative and commercial machine.

The emphasis placed on games inevitably detracts from interest in mental work. No one can gain much popularity by intellectual achievement, and all original zest for reading or for studying natural history is usually effectively knocked out of a boy by the time the milling process is over. As a super-

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visor of ex-Public School men at Cambridge University for many years, I have continually found interest in work considered bad form, however intelligent the undergraduate might originally have been.

When asked to sum up their achievement, the chief quality that the Public Schools claim to impart is character. But it would be more helpful if we were told what sort of character. When reading testimonials of candidates for posts one is well advised to look carefully for what is *not* said, and in considering this general testimonial to the Public School product one may perhaps follow suit. What does 'Character' not imply? It appears to omit first of all intelligence and enthusiasm and zeal for work; one of the very qualities so urgently required in the modern administrator. Nor does the word appear to cover individual initiative, imagination and inventiveness. In fact, so far from overcoming cramping convention, the 'character' aimed at and referred to appears to mean a purely conventional character.¹ Instead of leading our future generals of industry out of the fetters of the gentleman and sportsman ideals, the Public Schools turn them out right loyal subordinates to these inadequate traditions.

§ 7. *The University as Training Ground*

The time has now come to review what has happened to the twenty out of every thousand who are born with potential powers of business administration. Fifteen of these were supposed born in poor circumstances, of whom ten were handicapped in

¹ Exactly the opposite of the use of the word when we refer to a house or a town having 'character', i.e. some peculiarity that sets it apart from other houses or towns.

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early life for that very reason. That leaves us five poor and five rich hopefuls. Of the five rich we may suppose all to have gone through the mill of the Public Schools and at least one of them to have had all initiative knocked out, and another all intelligence and enthusiasm damped down. Of the remaining three, one may go out into business and perhaps be a success ; and the other two may be taken to have gone up to Oxford or Cambridge. What happens to these undergraduates ?

At the universities games are not compulsory, the mental work is more interesting, and there is less discouragement of initiative. But the danger to the cause of business administration is that the more intelligent of the youths that reach the universities are there likely to be deflected from a business career. Some may automatically, by doubling of ' Firsts ', find themselves dons ; triumphs in the Union debates may to others suggest a political career via the law ; or, since awards are made on the basis of examinations and examinations are their *forte*, others may enter the Civil Service. In any case the university atmosphere will be all against a business career. The view prevalent in the eighteenth and early nineteenth centuries that business is relatively dishonourable compared to the ' services ' and liberal professions, and that a tradesman is no gentleman, persists at the older universities (as it does to some extent at the Public Schools) and deflects the more ambitious boys not forced by inheritance into some family concern, away from business. Hence while England has perhaps the ablest lawyers and civil servants in the world, her business men are on the average of lower attainments and keenness than their opposite numbers in France,¹ Germany, or the

¹ See Siegfried, *England's Crisis*.

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United States. A partial solution of the difficulty here would be to admit education for industrial administration into the curriculum of all, but particularly of the ancient universities.¹ This would tend to raise the status of a business career to that of a profession in the minds of university tutors and dons; they might no longer deprecate business as dull, sordid, and ungentlemanly, and so deflect the able richer undergraduate from its pursuit.

The poor and the rich are still separate problems as sources of supply of higher personnel, and we must now turn to the five relatively poor boys who succeeded in surviving the consequences of poverty early in life.

Of recent years children of relatively poor parents who have received a council school education, have been able to reach the university in larger numbers. Whether they attend the older or the newer universities, the majority of them are destined to be school teachers or technicians, but a certain proportion of them take economics or commerce courses with a view to a business career.

The characteristic of these council school products that must first strike the university teacher is their complete passivity. Their school training seems to have knocked them speechless. Whether this is due to the schools themselves, with their large classes, their discipline, and their tendency to overdose with textbooks and lectures instead of helping the scholars to read and think for themselves; or whether the poverty (mental and material) of the homes are responsible, I do not know. All I can say is that to

¹ For the type of education for business actually pursued at Manchester, Paris, Birmingham and Harvard Universities see the Sylvan Press, *Business and Science*, Section II; see also Bowie, *Education for Management*, Chaps. VII and VIII.

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fit such material for management, the university teacher must strive valiantly for an active response. He must behave like a vaccine to stimulate the latent initiative, and university institutions must be formed to give scope for the exercise of powers of co-ordination, not merely to develop intelligence.

It must be realized, however, that the chief circumstance checking the flow of capable working-class boys into business is the difficulty of finding positions that lead anywhere. Such positions, where they do exist, are too often reserved for family connections, or friends of the directors or partners. Usually the young man with initiative and brains, but no connections, has to accept a very subordinate routine position from which he has no assurance of being promoted, however efficient he may have proved. If definite training schemes such as a few large firms (e.g. Lever's or Avery's) have adopted were more frequent, or if the method of attaching promising youths as private secretaries to the staff of the head of the business became more prevalent, then many more poor but ambitious and capable young men would be prepared to train for business at a university. At present it pays them best to leave school for business at sixteen, since they will probably not obtain any more lucrative or promising position by leaving the university at twenty-one.

Thus it comes about that of the five potential managers among the poor, two may be lost by the educational wayside at sixteen (perhaps one will succeed eventually) while of the three survivors reaching the university, at least one will drift into teaching and another into a purely technical vocation. Is it too much to hope that one of these qualified poor may definitely train for business

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management and thus, supplemented by an occasional richer undergraduate, yield one or two out of a population of a thousand able, willing, and educated for the successful administration of large scale enterprise ?

CHAPTER IX

CONCLUSIONS

THE aim kept in view throughout this book has been industrial efficiency defined as maximum return physical, pecuniary or psychological at minimum physical, pecuniary or psychological cost. Industrial organization is considered rational or logical in so far as it results in this efficiency. It was argued in Chapter I that the long-period efficiency of industry would be increased by large-scale operation, that is, specialization of firms or plants upon one or a few standard commodities produced or sold in large quantities. In point of fact, however, most productive and distributive industries in England, America and other supposedly efficient countries, were shown in Chapter II to operate on a small scale. Small plants and small firms provide the bulk of goods and services in unstandardized variety and small quantities. The remaining chapters of this book have attempted to explain this illogical organization and have suggested practical steps toward a more logical and more efficient plan.

The distributive system and the margin exacted by middlemen is blamed by engineers and technocrats for high costs and the high prices charged to the consumer. Goods could certainly be obtained cheaper if consumption were planned by authority as in Russia so that the exact kinds and amounts

required were known and standardized. Such a revolution is not at present a practical proposition in capitalist countries and they look to the continuance of distribution for free demands rather than for officially determined needs. This system must remain expensive, since the final consumers will buy on a small-scale for family use only, and all consumers' demands will remain multifarious and unstable. The practical policy for making this variability less uncertain is to analyse the types, find the elasticity and satiation points and forecast the trend of demand, and to design products, fix prices, and plan production accordingly. The competition of numerous small firms adds greatly to the difficulties of such scientific marketing. New varieties are continually placed on the market by competitors thus stimulating in a vicious circle further demands for variety. Competition also makes it difficult to envisage the plan and policy of an industry as a whole. Reliance must be placed either upon official restriction of competitors by licensing, or upon the ultimate victory of the more efficient large-operation firm (possibly through its advertising of specific products), or upon combination of firms each specializing in one product, but associated for distribution. This is the policy popularly known as rationalization. Rationalization carries with it the danger of monopoly, and may thus eventually involve the public control of industries, if not their nationalization. This points to the reorganization of investment, employment and management relations.

The internal organization of a modern firm must adapt itself to the growth of mechanical equipment and investment in fixed capital specialized for one purpose. In the relation between employer and

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employee this development appears at first sight to necessitate unemployment and loss of consuming power. The paradoxical situation that some men are working long hours with full pay on fatiguing machine work, while others have complete leisure but no income to spend may be avoided by working short multiple shifts. This policy would ensure fuller use of capital equipment and reduction of overhead costs, while distributing shorter hours equally over the labour force.

Economists have supposed the efficiency of large-scale firms to be limited chiefly by the ability of the manager to cope with the volume of work, but this limitation of size is not necessary if the internal organization of the firm is 'politically' adapted to the specialized management that large-scale operation permits. Large-scale firms are often inefficient because they indulge in a wide variety of small-scale operations, and neglect the scientific principles of organization. Both the old-fashioned hierarchical or military organization and the new functional system may lead to inefficiency and should be replaced by organization of line-and-staff type. By schematic devolution of control, and the introduction of expert staff advisers, large-scale organization can avoid too great a concentration of duties upon the general line administration while preserving a 'core' of ultimate undeveloped and unspecialized control to co-ordinate investment, employment and management relations.

This ultimate control consisting in the determination of general price and output policy, in general strategy, and in the right of appointment and of organizing and reorganizing has changed, and may again change hands.

In the modern capitalist system large-scale opera-

tions are usually controlled by joint stock companies which have displaced the individual entrepreneur and have lost much of the enterprise and alertness associated with his name. The ultimate activities of organization and appointment are performed initially by the company promoter, but ultimate control is subsequently vested in the more active financier shareholders through their influence in reorganizations and in the annual appointments to the Board of Directors.

Where an efficient scale of operation involves monopoly, and public control proves ultimately necessary in the interests of the consumer as against the financier, new forms of nationalization can be adopted to preserve both central control over large-scale operations and the enterprise associated with the older if not the present capitalism. Organization under semi-independent public commissions or corporations, taking the place of control by government departments, should be able to engage as efficiently as joint stock companies in industries hitherto thought suitable only for capitalist organizations. This possibility depends ultimately as does efficient large-scale operation under any control—capitalist, consumer or State—upon further research into organization and methods of management and upon the building up of a real political science of industry.

Large-scale operation will not in and by itself ensure efficiency. Apart from the insistence of the consumer upon an uncertain multiplicity of goods and services that cannot be produced at low cost by large-scale methods, there is great difficulty in adjustment of employment, investment, and management relations into the frame of large-scale organization. Men engaged in business as administrators

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and investors are, no less than the labourers they employ, human beings, not, as is often assumed, hundred per cent efficiency experts. They are not continually geared up to the maximum productivity ; and certain psychological conditions are required to keep them even to a moderate efficiency. There is a specific loss of stimulus to the human factor psychologically connected with large-scale organization, and since scale of operation is partly dependent on scale of organizations, this offsets the physical advantages of large-scale operation. Psychological obstacles to a logical scale of operation can be overcome by psychological means. New inducements must be planned to stir the willingness, and new conduces to strengthen the ability of labour, investors and administrators.

Labour, routine and supervisory, is apt to feel a mere cog in the large-scale industrial machine and to lose all sense of identity with the interests of the firm as the firm grows larger. This check to large-scale efficiency can be met by the grant of more local autonomy to factory departments and by a policy of informed joint control in the determination of the conditions immediately affecting the workers' life. The weakness of non-pecuniary incentives makes the wage or salary and its method of payment of outstanding importance in large-scale industry, but the strength of this inducement depends upon the outlets for spending. A fixed 'lower-class' standard of living and restriction of leisure time in which to spend limit the trans-pecuniary incentive of higher wages. Non-pecuniary factors such as the sociability or respectability of an occupation affect the mobility of labour, and industries that require additional men, but lack these attractions in the eyes of labour, must com-

pensate for their net disadvantages by paying higher wages and providing physical conduives to movement such as cheaper transport and houses.

The private investor is haunted by the risks of long-term investment in the ordinary shares of large-scale companies over which he has little control. He is ignorant of the prospects of the various industries, subject to herd instinct, and slow in moving capital into the more efficient channels. These checks to the logical accumulation, distribution, and redistribution of industrial capital may be partially overcome by the forced publication of more accurate information; but more reliance will probably have to be placed in the future either upon re-investment of funds by capitalist undertakings, or upon public corporations financed by fixed interest loans. In all cases the cost of productive investment could be reduced, and the logical distribution of capital furthered, by some form of State investment control.

Large-scale operation usually involves the substitution of an entrepreneur managing and owning his own business and remunerated through a profit, by fee'd directors and salaried managers administering a joint stock company or other impersonal organization. This weakening of the pecuniary stimulus at the very core of control is perhaps the most serious obstacle to the efficient conduct of large-scale organizations, and partially explains the actual preponderance of small-scale operations. Incentives to efficient administration are not, however, all pecuniary, and the reactions to non-pecuniary and trans-pecuniary stimuli must be taken into account as exhibited by the various types of business administrators now actually in control of industrial organization.

These types include the self-made entrepreneur, the heads of a family business, the financier, the

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guinea-pig and ex-professional-man director, the ex-foreman, the ex-technician, and finally, the trained administrator. Each of these types reacts differently to the vital problems upon whose solution large-scale efficiency depends. Each must be assessed differently in respect of efficiency in initiating large-scale expansion, in co-ordinating the several departments and functions of the firm, in reinvesting capital, in making appointments, and in co-operating or combining with other firms.

The old-fashioned self-made or family head entrepreneur appears to fall short in several respects of the newer types of administrator, particularly the trained administrator. The self-made entrepreneur often fails to adapt himself and his organization to large-scale planning and technique. His education, experience, and individualist habits are not conducive to the successful co-ordination and reintegration of specialists or to co-operation with other firms. The family head entrepreneur does not always wish to expand business in response to the chance of higher profits. He has the fixed though high standard of living of the gentleman of leisure, and the chance of a high supply price will not necessarily increase his output. The trained administrator offers on the whole the best hope that large-scale operations may be expanded with the same initiative that the entrepreneur displays when expanding his small-scale undertakings.

For a long run expansion, supplies of efficient trained administrators must be obtained at a low supply price, and attracted into those industries where expansion is demanded. A business career must be invested with stronger non-pecuniary, social, and psychological incentives and attractives than are at present attributed to it in educational

circles ; and an education must be devised that will conduce to administrative efficiency and will stimulate mobility into the various branches of business of all those most potentially efficient.

The present English educational system requires radical alteration if it is to help in supplying efficient industrial administrators. Only a very small proportion of children are born with the gift of administrative powers, and the majority of these are prevented from ever developing and exercising these powers by the poverty of their parents and the conventional outlook of the family and other social institutions. Education should lead children out of this rut but instead abandons most of the poor at an early age and ploughs those who remain at school still deeper into traditionalism. The English Public Schools cater for a distinct upper class and inculcate a code of behaviour that directly discourages the initiative, co-ordination, and intelligence required in the modern administrator of large-scale business, and instead encourages the traditional gentleman-ideal,—an ideal that makes for contempt of trade, amateurishness, and exclusiveness. At the older universities the abler undergraduates are likely to be deflected from a business career into the liberal professions and it is only at the modern universities that a specific training is given in commerce or industrial administration.

At present the ablest candidates for business see that it pays best to cut even their school career short, since most employers still value haphazard picking up of knowledge and skill by experience above a professional training. If, as we believe, both training and experience are required for maximum efficiency in the administration of modern large-scale industry, then the vicious circle must be

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broken that stops able men training for business because business thinks able men need not train. Employers should realize that the standard of workaday efficiency tolerated in the past is not necessarily the future standard required in a more logical industrial organization; and educational institutions should make it possible for the fittest of the new generation, whatever their class, to prepare for the profession of business administration, and thus allow inborn ability plus training plus experience to supply leadership for a new, more efficient, more logical industrial order.

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