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THE PRINCIPAL

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ECONOMICS

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This set of lectures contains:-

LECTURE 1 : Production Process and Division of Labour.

LECTURE 2 : Returns and Production.

LECTURE 3 : The Scale of Production.

LECTURE 4 : Factors of Production.

TEST LB2

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NOTE: The test on this set of lectures is bound in at the end of this book.

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THE PRODUCTION PROCESS AND THE DIVISION OF LABOUR

I. THE PRODUCTION PROCESS

A. THE IMPORTANCE OF PRODUCTION

The standard of living of a person is reflected in the goods and services he consumes. In a money economy, a person cannot noramlly consume unless he purchases, and since he cannot purchase unless he has a money income, or credit backed by earnings power, we may say that a person's money income generally gives an indication of his standard of living. If we consider the community as a whole, however, the total output of goods and services per head of population, becomes the measure of the average standard of living of the community. If a community is poor, the output of goods and services is relatively low; if the community is wealthy, the output of goods and services is relatively high. If the output of goods and services is increased and the size of the population remains unchanged, the average standard of living of a community will be improved. This does not necessarily mean, however, that the standard of living of each individual member of the community will improve, for the increased output of goods and services may be divided amongst a limited number of the community. It is well known that a redistribution of wealth or an accumulation of income between the members of a community by the transfer of incomes from the very rich to the very poor would tend to eliminate individual cases of extreme poverty. It would also eliminate a source of capital! That is, however, another problem - a problem of distribution. We are here concerned with the problem of production.

B. PRODUCTION DEFINED

Production is the result of making use, in an infinite variety of ways, of the resources or factors of production, (land, labour, capital + organisation)- always in relatively limited supply - available to man for the purpose of supplying him with goods and/or services for the satisfaction of his needs and wants.

Thus when anything is produced, from a pin (let us say) to a spacecraft, from a skateboard to an ocean liner, a UTILITY is created.

Production creates not only utility, but VALUE as well. The economist is not concerned with the intrinsic value of a commodity, but only with the value of goods or services that can be exchanged either for money, or for alternative goods or services. In short, the value created by production is potential VALUE-IN-EXCHANGE.

From the point of view of a community, production takes place whenever value is created. Such value may exist in the shape of material goods, as for example the corn grown by the farmer, or in the shape of services, such as those rendered by merchants and doctors. Material value may be created:

(1) by changing the form or arrangement of matter;
(2) by changing its position;
(3) by storing it over a period of time.

Thus:

(1) The manufacture or production of furniture consists merely of changing the form or arrangement of bulk timber.

(2) A commodity often has greater value at one place than at another. For example, coal is of less value at the pithead than at the home or the factory of the consumer. The merchant who transports the coal from the mine to the place of consumption is truly as productive as the miner who extracts it from the bowels of the earth. The middleman, although he does not actually handle a product but merely acts as a link between producer and retailer, must also be regarded as productive in the economic sense.

(3) Corn is of greater value when it is scarce than when it is abundant; production may take the form of storing corn until required for consumption, or to keep the price at a favourable level.

From the point of view of a person, all effort is productive which procures an income. If the construction of a railway is begun, production takes place. Subsequently, however, work on the railway may be abandoned. The production then proves to have been misguided; it has not added to the wealth of the community. Nevertheless, to the labourers employed, the work was productive while it lasted, since it procured wages for them.

C. THE VOLUME OF OUTPUT

The volume of production in a community is affected by two main influences:

(1) Technology and expertise:

These terms (nowadays usually referred to as "technical know-how") refer to the methods of production used in the community. This is the sphere of chemists, industrial researchers and other scientists whose subjects do not fall within the group of social sciences. The work of these men is directed to obtaining greater control over nature, thus effecting, where possible, increased production. Growing two ears of wheat, for example, where previously one would grow.

(2) Resources:

These include all the available factors of production. Anything which plays a part in production and makes a contribution to the final product is a factor of production (sometimes called an agent of production). What the economist calls the factors, or agents of production, geographers call economic resources. Whereas geographers are concerned primarily with the quantity of these resources, economists are mainly concerned with the manner in which the available resources are used to produce goods, and their quality or productivity.

D. THE FACTORS OF PRODUCTION

Although nearly all units of productive factors differ in some respect, it has become customary to group all factors under the headings of land, labour, capital and entrepreneurship.

(1) Land

The term "land" in Economics is used to denote all the resources of nature. "By land is meant the material and the forces which nature gives freely for man's aid, in land and water, air and light, and heat". (Marshall).

Ricardo said that Land means "the original and indestructible powers of the soil".

It is a very difficult matter to compare the quantities of factors of production available in two different countries. There is little or no uniformity between units of factors; thus one thousand acres of land in one country cannot be considered as equal to one thousand acres in another country unless the climates of the two countries and the fertility of the two areas of land are similar. If one area of land is suitable for agriculture and the other not, but contains valuable mineral deposits, it would be out of the question to compare the wealth-producing qualities of the two areas of land for only things which are similar can be compared. Moreover, some of the land may not be used in the most profitable manner, because it has qualities which have not yet been discovered.

The whole of production is ultimately dependent upon nature. Note that to <u>all</u> resources of nature the term "land" is given.

(2) <u>Labour</u>

By labour is meant all human effort, whether of hand or mind, which is undertaken <u>for a reward</u>. All labour, then, is effort, but not all effort is labour. The distinction depends not on the degree of exertion, but on whether the labour is undertaken for reward, either in money or in kind. Exertion undertaken merely for amusement or exercise does not constitute labour. For example a housewife - how would we put a price on her services?

Secondly, it is the services rendered by the factors which actually contribute to output. Thus, the supply of the factor labour may be claimed to be the same in two countries since the number of people of working age in each country is the same, but this would be a fallacy if the people in one country were prepared to work more hours than those in the other. The supply of labour-hours would, in other words, be greater in the first country.

(3) Capital

At an early stage man finds the need for implements to help him not only to increase his productivity, but to satisfy more diverse needs with greater ease. Implements which contain the attributes of wealth are themselves regarded as wealth in economic terms; such wealth used to produce further wealth is called capital. Some of the difficulties in connection with the definition of capital have already been pointed out. For the present, then, it will be sufficient to note that capital is all wealth, other than land, which is used in the production of further wealth. (Capital must be the result of past labour and for this reason it is sometimes referred to as "crystallized labour".)

(4) Organisation

A fourth factor of production is organisation. (Organisation used to be called entrepreneurship where the entrepreneur was the risk-taker, decision maker and organiser in a commercial enterprise.) This is the skill and effort put into the running of a firm by an executive i.e. a person in effective control of an undertaking whether the owner or the manager of the business. The factor reward to him is profit.

Thus, while the accountant considers interest, rent and wages as costs to a business with profits as the residue, the economist classifies profit as a cost as well. It varies, however, depending on the levels of the other three.

Thus, factors of production create income. The process may be broadly summarised thus:-

(a) Land - which earns rent
(b) Labour - earns wages + salaries
(c) Capital - yields interest
(d) Organisation - the "entrepreneur", who earns profits.

E. SPECIALISATION AND CO-OPERATION

We may divide production into main classes:

(1) the provision of commodities;
(2) the rendering of services.

The first class comprises the extractive or primary industries --- hunting, fishing, agriculture and mining --- and the constructive or secondary industries which utilise the materials provided by the extractive industries and which work them up into a shape or form suitable for consumption. They may be said to add form value to commodities. Examples of this type of industry are engineering, building and road-making.

Between the manufacturers and the consumers stand the merchants or traders, who perform commercial services, and through whom the needs of society flow. It is the function of the trader to move goods from place to place (transport), and so add place value to commodities, and to store goods (warehousing), thus adding time value.

Some production occurs in the form of direct services rendered to consumers; for example, the services of accountants, attorneys and doctors. Even though they do not result in the creation or processing of a material or commodity, the services of these men are none the less economically productive. This short account of the manner in which individuals tend to specialise in particular industries or services is sufficient to show how, in modern communities, there is a high degree of co-operation between different sections of the community.

Specialised segments have become integrated and interdependent. This is an application of what is known in Economics as the principle of the division of labour.

You should note these points:

(1) Specialisation does not apply only to labour. We give specialisation of labour a good deal of attention, but

specialisation may also be applied to the other factors of production:

(a) Capital

Any man-made asset designed for a special purpose is specialised capital, e.g., a dam for irrigating a river valley, a corkscrew, etc. Specialised machinery has created a new set of specialised occupations such as fitters and turners, engine drivers and crane operators.

(b) Land

The specialisation in this case may be predetermined by climatic factors or by the presence of mineral deposits, but where there is a variety of available uses, the use which is economically the most productive will generally be the one to which the land is put. This is the use which best satisfies the wants of the community.

(2) It would be far from the truth to claim that the increase in productivity over the last century or so has been due to specialisation. Specialisation as such is a fairly recent development. The car industry in America for example used techniques of specialization, although it was first mentioned by Adam Smith in the 1800's.

It began to be rated as a most desirable level of attainment early in the century; it gained in desirability after the First World War; it became a "must" after the Second World War, and increased until now it has almost become a fad - it is the "in thing" to be a specialist. I am tempted to quote Sir Bernard Spilsbury's classic definition of a specialist as being one who "learns more and more about less and less until he ends up by knowing everything about nothing".

In this present technological age, specialisation has certainly contributed vitally to increased production and productivity, contriving new techniques in increasing procession: indeed, the more technical expertise is needed, the more specialists will be engendered, in order to cope with the increasing technological problems of the age.

The danger lies in the development of hyper-specialisation (Witness the numbers of highly qualified scientists looking for jobs when the American space programme's budget was severely cut in the seventies.)

(3) Specialisation is less apparent in agriculture than it is in manufacturing. In manufacturing it is possible to sub-divide a process which is itself part of a whole, into a number of sub-processes. An individual can thus become a specialist in a particular sub-process which he performs over and over. This is just not possible in agriculture. A manufacturer also often specialises in only one or two products. This is very unwise for a farmer because of unreliable weather. He thus engages in mixed farming in order to spread his risks in the event of a crop failing. It is highly unlikely that a farmer will specialise in just one product e.g., maize.

PRACTICE EXERCISE

Define clearly what production is "Production may be defined as the result of making use in an infinite variety of ways of resources or factors of production, (land, labour, capital and organisation) - always in relatively limited supply - available to man for the purpose of supplying him with goods and/or services for the satisfaction of his needs and wants."

How can material value be created? 1. It can be created by changing the form or arrangement of matter; 2. 2. By changing its position; 3. By storing it over a period of time

What are the four factors of production? They Labour, Land, Capital and entrepreneurship

What part does the factor "organisation" play?

What are the two main classes of production? The Main classes of production are (1) The provision of commodities and (2) The rendering of services.

II. THE DIVISION OF LABOUR

A. THE MEANING OF DIVISION OF LABOUR

Man in isolation had to satisfy all his wants himself as best he could. As communities developed, however, he found that he could add to his productiveness by co-operating, first with the members of his family, and later with the members of his tribe. In short, the labours necessary for the survival of the community could be shared or divided between the members of that community.

Division of Labour is, then, the dividing of the work among a number of individuals in such a manner that each performs a separate operation. The example given by Adam Smith in "The Wealth of Nations" (published in 1776) is as good as any. Referring to the manufacture of pins, he comments that:

> "The business of making pins is divided into about eighteen operations involving ten employees producing 48 000 pins a day. Individually they could not each of them make twenty a day ..... thus the advantages of division of labour".

B. THE FORMS OF DIVISION OF LABOUR

Division of Labour may take countless forms, but we should notice three main types:

(1) The specialisation of individuals in single trades, professions or industries is perhaps the simplest form, e.g., the doctor, the lawyer, the teacher, the priest, the designing engineer, the draughtsman, the works foreman, etc.

(2) A different type of specialisation exists when each man concentrates on a single <u>process</u> in the production of an article. Thus in the making of cloth we have the spinning, weaving and dyeing processes, each of which is a specialised

function. As specialisation develops, processes are split up into part-processes and these again may be sub-divided, each sub-division leading to greater specialisation and to the worker's performing a smaller and smaller part of the whole process of production.

(3) The application of the principle of division of labour to the world as a whole results in what is known as Territorial Division of Labour. Whether by reason of geographical situation, the presence of power or materials, geographical situation, the presence of power or materials, transport and marketing facilities or the presence of an adequate labour supply. On account of these "local" advantages the areas or countries concentrate on the production of the articles to which they are most suited, i.e. they specialise.

David Ricardo showed that trade would take place on the basis of comparative advantage. He took two commodities, wine and cloth, in two different countries, England and Portugal.

	Labour cost of production (hours)	
	1 unit of wine	1 unit of cloth
Portugal	8	90
England	120	100

Before trade takes place the following position exists:-

In Portugal it takes 80 hours of labour to make one unit of wine and 90 hours for 1 unit of cloth, so cloth is more expensive per unit than wine. One unit of wine will cost 0.89 unit of cloth.

In England it takes 120 hours of labour to make one unit of wine and 100 hours for one unit of cloth, so wine is more expensive per unit than cloth. 1 unit of wine will cost 1.2 units of cloth.

If one assumes an international ratio of one unit of cloth in exchange for one unit of wine, Portugal will exchange 1 unit of wine for 0.89 units of cloth, and England will exchange 1 unit of wine for 1.2 units of cloth.

If trade takes place England will only pay one unit of cloth instead of 1.2 units for one unit of wine, and Portugal gets one unit of cloth instead of 0.89 units for one unit of wine. It clearly would pay each country to specialise.

C. THE ADVANTAGES OF DIVISION OF LABOUR

Increased specialisation has many advantages in production and we shall discuss these, first with reference to the world as a whole, then with reference to its effects on production generally, and finally as regards the worker.

(1) The World as a Whole

Division of Labour enables the different raw materials, etc. of different areas to be utilised. Through international trade, the surplus of one country can then be exchanged for the surplus of others and the productivity of the world as a whole is at a maximum.

(2) Production Generally

(a) Increased Output at Lower Unit Cost. This is because the worker becomes much more efficient by concentrating on a particular task or process. Thus a greater output for a given amount of labour is achieved.

(b) The Use of Machinery. The substitution of machinery to do certain tasks that used to be done by hand has added enormously to the volume of goods produced, particularly when the work is capable of being split up into many processes, each one of which is performed at speed by a selected group of workers. Indeed, a study course, termed "Time and Motion Study" has been designed to produce specialists in the manipulation or management of labour, whose responsibility is to investigate the organisation of division of labour with the aim of improving still more the facility and speed of production.

(c) Time is saved. This is because where there is no specialisation, time is lost in moving from one process to another or changing tools and equipment, whereas, with division of labour, the worker is engaged on one operation the whole time. Time is also saved in the process of learning the job, for only a part of the whole will have to be learned, and yet more time is saved as the worker acquires greater ease, and, in purely manual effort, greater dexterity in completing his particular part of the whole job.

(d) Tools are saved, since there is no passing of labour from process to process, each worker requires a few specialised tools instead of a large number of different tools. The various implements now yield a better return for their cost.

(e) Skill is saved. Workers may be classed according to capacity and can, therefore, be more economically employed. Work for which the labourer is best fitted involves a minimum expenditure of skill and strength.

(3) The Worker

(a) Increase in Skill and Dexterity. When different kinds of work are allotted to different persons, according to their individual capabilities, each acquires a high degree of dexterity in his particular work.

(b) There is considerable diminution of physical strain; strenuous work, e.g., deep drilling, is now done by machinery.

(c) Labour may become specialised in certain localities. Men of imagination who possess, also, special knowledge and skills, are quick to see opportunities where none, perhaps, were thought to exist. The story of the Witwatersrand amply illustrates this. Specialised industries spring up, and a reservoir of skilled labour tends to accumulate where it is needed. This labour force is swelled by the proliferation of the semi-skilled and the unskilled, who all too frequently find it difficult to obtain employment. The division of labour alleviates this to a great extent.

All production (and here the reference is to factory production) requires, as well as skilled labour, the services of the semi-skilled and even those who are generally regarded as unskilled. A factory employs, for example, messengers and packers and loaders and cleaners (and certainly tea-makers!), all of whom contribute in some way, however humble, to the functioning of the whole establishement, and thus to the process of production.

NOTE: Many practical examples of such localisation of industry exist in South Africa, where the Government's policy of decentralisation of industry, begun rather tentatively more than thirty years ago, has brought the factory to the worker rather than the other way round. Factories have been, and are being, established near the borders of the Black homelands and the fairly recently created Black states: a pool of promising labour is forming in these localities - the potential is enormous'. The division of labour makes it possible to absorb large numbers of the semi-skilled and the unskilled as well.

(d) In view of his greater ability to produce more goods, a worker's efforts command better pay. (It is interesting to note, however, that industrialists seem to be complaining with increasing volubility that recent increases in workers' wages have failed to increase productivity.) Unfortunately, not infrequently expectation of better pay ends in disappointment. While the minimum wage payable is laid down by the Goverment, workers' achievement of higher than minimum wages depends to a great extent upon the attitude of management to labour. Where the profit motive assumes disproportionate importance in the mind of the management, attractive earnings and perquisites tend to remain the privilege of only the lucky few.

D. THE DISADVANTAGES OF SPECIALISATION

(1) The World as a Whole

Territorial specialisation is a severe drawback in time of war, or embargoes.

(2) The Worker

(a) The mental effect is here the most important consideration. There is a loss of all-round skill and sense of responsibility. The individual worker has no direct personal interest in the finished product because the process for which he is responsible is but a minute part of the whole system. Thus division of labour tends to monotony, with a narrowing of interest, blunting of intelligence and crippling of individuality and initiative.

(b) Labour becomes more immobile. Specialisation is one of the greater obstacles to the free movement of labour. A workman who has been engaged for years on a single operation becomes unfitted for any other occupation unless the latter is very similar. Should he lose his job for any reason, he might well find it difficult to get another, his experience being confined to his specialisation.

(c) Areas come to depend on one particular industry so that depression in this industry causes distress throughout the area. Thus "depressed areas" may be proclaimed even in a time of apparent general prosperity.

E. THE USE OF MACHINERY

In a period of fast changing specialised technologies such as we are living in now, it is difficult to remember that even only forty years ago various articles that, to-day, are mass-produced by machines were then customarily made by hand. It is well to remember that a machine is only as good as the competence of its operator makes it - an irresponsibly driven motor car ceases to be a vehicle, and becomes, instead, a lethal weapon; an incompetent computer programmer can make havoc of your bank statement!

Machinery has its advantages in use as well as its disadvantages, so let us consider a couple of each.

(1) The Advantages of Machinery

(a) Man's power over his environment and natural resources is increased by using machinery: to tunnel through solid rock, for example, or to raise a wreck from the ocean-bed.

(b) Man is relieved of physical strain. To the extent that machines now perform both the most arduous and the most monotonous processes, man has benefited.

(c) Machinery is faster, more regular in function, and usually - but certainly not always - more accurate, e.g. an adding machine.

(2) The Disadvantages of Machinery

(a) Labour is displaced. Obviously the immediate effect of the introduction of machinery is frequently to displace labour.

Eventually the displaced labour is absorbed elsewhere, first because the production of new machinery in itself finds work for more labourers in its construction and upkeep, and secondly because the use of machinery has resulted in the production of a greater variety of goods, this, in its turn, producing a greater variety of work to be done.

(b) The skilled crafstman tends to disappear, and to be replaced by hyperspecialised engineers or managers linked to new technologies and requiring new detailed expertise.

(c) Machine-made goods are often inferior to hand-made goods. The machine does not give that care and attention which distinguishes personal work. Mass production methods often result in the production of an article whose apprearance is satisfactory but which will not last, eg., cheap clocks and mechanical toys.

F. THE GENERAL EFFECTS OF SPECIALISATION

The consequences of division of labour are so far-reaching that they fashion the whole structure of any economic society which is based upon the system of division of labour.

(1) Division of labour implies co-operation. We can only specialise in one direction if we can rely on others to supply us with food, clothing and other commodities and services; we are all inter-dependent and the more we progress, the more we rely on others.

(2) The division of productive effort into separate functions necessitates co-ordination, i.e., control of the direction of effort. This is the duty of the organiser of labour, whose function is to co-ordinate the efforts of a group of specialised workers. A few command and many obey. In the community as a whole this co-ordination is provided by the force of competition under laissez-faire or capitalism; under socialism it is supervised by a central dictator.

(3) Labour is divided into a large number of different occupations.

The work Man does to earn a living is divided into an almost incredible - and increasing - number of different occupations.

Taking only highly skilled labour into consideration, we find that the division is into four main categories:-

(a) Those people, generally termed "practical", whose skill has developed along technical lines, e.g. engineers, surgeons;

(b) Those with a keen brain, often accompanied by a clumsy hand, e.g. accountants, lawyers;

(c) Those whose talents are of the imaginative variety, e.g. writers, artists, actors;

(d) Those with entrepreneurial skill, or inborn qualities of leadership.

It is both impossible and unnecessary to attempt a more comprehensive list here; it should be enough merely to point out that "labour functions in many, many guises." The point must be made, too, that specialisation affects the mobility of labour, and the "right man" is not always available for the "right job" when the need arises.

(4) Progressive division of labour usually results in the lengthening of the chain of production. Although less labour is expended on the production of each individual unit of output when division of labour and specialisation are the rule, it usually happens that a longer period elapses between the time production is begun and the time it is ended. This tends to reduce the advantages of the economy of time achieved by the division of labour.

(5) Division of labour necessitates the exchange of commodites, and a satisfactory measure of value plus integrity in applying it, becomes necessary. The determination of price and value is a very important part of economic study.

G. LIMITS TO THE DIVISION OF LABOUR

In general, division of labour is limited by:

(1) The nature of the industry. Manufacturing industries generally offer wide scope for the application of division of labour, but in firms where only a small staff is employed, arbitrary divisions are impracticable, even impossible.

(2) The size of the market. This does not necessarily set a rigid limit, for often the market can be extended if a reduction in working costs is followed in turn by a reduction in the price of the product. But the possibility of specialisation, and thus division of labour, is not feasible unless the demand for the commodity is, generally speaking, great, or unexploited due to lack of marketing effort.

(3) Transport difficulties may adversely affect the scope of the enterprise even though the potential for development exists. Conversely, transport facilities play a considerable part in delimiting the market, but whether these are sufficient to make the organisation of division of labour practicable in certain cases is a special, not a general, consideration.

(4) The difficulty of efficient management. After a certain point is reached in the expansion of any economic unit, organisation may become so complicated that problems of management must be offset against the advantages of increased productive specialisation and division of labour.

(5) Technical difficulties. After a certain point has been reached it becomes impossible to divide a process any further, without introducing self-defeating diseconomies.

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SUMMARY

I. THE PRODUCTION PROCESS

A. The importance of Production.

B. Production defined: Material values created by changes involving the form and position of utilities, and time factors.

C. Volume of output affected by

1. Acts of God
2. Technique
3. Factors of production.

D. The factors of production:-

1. Land - includes "the material and the forces which Nature gives freely for man's aid, in land and water, in air and light, and heat."
(Marshall)

2. Labour - of many different kinds, but all undertaken in expectation of reward, i.e. to earn income;

3. Capital - all wealth, other than land, used in the production of further wealth;

4. Organisation - the skill and effort put into a firm by the executive, and the risk taken by him.

A high degree of specialisation, co-ordination and co-operation exists in modern communities in order to increase and improve Production.

E. Specialisation and co-operation: The provision of goods and services affects not only labour and productivity, but land and capital as well.

II. THE DIVISION OF LABOUR

A. Definition

Study the definition given in the notes!

B. Forms of the Division of Labour

1. Specialisation of individuals in professions and industry;

2. Existence of different types of specialisation;

3. Territorial division of labour; Ricardo's theory of trade on the basis of comparative advantage;

C. The advantages of the division of labour

1. To the world as a whole

2. To the product generally
   (a) output and unit cost;
   (b) the use of Machinery;
   (c) Saving of:

      (i) time
      (ii) equipment
      (iii) skill

3. To the worker
   (a) increase in skill and dexterity;
   (b) diminution of physical strain;
   (c) specialisation of labour in certain localities; the policy of Decentralisation;
   (d) workers' wages.

D. Disadvantages of the division of labour

1. To the world as a whole

2. To the worker
   (a) The mental and psychological effect of monotony;
   (b) Increased immobility of labour;
   (c) "Depressed areas".

E. The use of Machinery

1. The advantages of machinery:

   (a) Increase of man's power over available resources;

   (b) The manual labourer, in particular, relieved of physical strain;

   (c) Speed, regularity and accuracy of machinery an advantage in production.

2. The disadvantages of machinery:

   (a) Displacement of labour;

   (b) Disappearance of the craftsman; standardisation of product;

   (c) Inferiority of machine-made goods.

3. Labour divided into 4 broad divisions.

4. Lengthening of the chain of production.

5. Exchange of commodities necessitated.

F. Limits to the Division of Labour

1. The nature of the industry under consideration;

2. The extent of the market;

3. Facility, or otherwise, of transport;

4. Technical difficulties - labour can be divided only so far, and no farther.

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PROGRESS QUESTIONS

1. Discus fully the importance and meaning of production.

2. Why is specialisation less apparent in agriculture than in manufacturing?

3. Explain fully how "division of labour enables the different qualities of different areas to be utilised". (Cannan).

4. State and illustrate the advantages and drawbacks of the minute sub-division of labour which accompanies scientific progress.

5. Explain carefully the importance of specialisation in the production of wealth.

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GUIDES TO THE ANSWERS

QUESTION 1

This question requires the reproduction in your own words of Page 1 of this lecture.

QUESTION 2

Clearly, for specialisation to be introduced into production, it must be possible for the productive process to be divided up into a number of sub-processes, and it must, furthermore, be possible to carry on these sub-processes concurrently. Now in farming, it would be possible to have one man specialise in sowing and another in reaping, one man specialise in feeding cattle and another in milking them, but since there is no possibility of carrying these jobs on concurrently, there is nothing to be gained from specialisation of this nature.

It would, of course, be possible to have one farm specialise in dairy farming, another in wheat-growing and another in meat. Specialisation of this type is, in fact, carried on to a considerable

extent. It is not so apparent as in manufacturing industry, however. One reason for this is probably the dependence of agriculture on climate. A season which proves to be very unsuitable for one crop may be satisfactory for another and when he is at the mercy of a fortuitous factor like climate, a farmer does not want to put all his eggs into one basket. Another reason is the difficulty of expansion. A farmer cannot successfully expand his business if the surrounding land is already used for other purposes. Territorial limitations do not often impede the expansion of a factory.

(Note: Now try to think of some other reasons for yourself. Isn't the rotation of crops an argument against specialisation? It is bad for the soil to grow the same crop year after year.)

QUESTION 3

The question refers to the territorial division of labour. This is explained in the Lecture but the following example from Benham's "Economics" gets to the root of the matter very succinctly:

"Suppose there are two areas: one specially suited for wheat and the other for tea. If each is self-supporting, the first produces, say, 1 000 units of wheat and 200 of tea; the second, say, 1 000 of tea and 200 of wheat. If the first produces only wheat, it can produce, say, 2 000 units and if the second produces only tea it can produce, say, 2 000 units of tea. Thus instead of having only 1 200 wheat and 1 200 tea produced between them, by specialisation they can have 2 000 of each --- from the same means of production. The first area can then exchange some of its wheat against tea from the second area".

QUESTION 4

This question is easily answered from the lecture. In an examination answer you should not, however, set out the advantages and drawbacks in tabulated form as they are in the lecture. Answers to Economics questions should be miniature essays and although some tabulation is permissible (e.g., setting out a number of similar points in numbered paragraphs) it should not be carried to the extent it is in the lectures and summaries. Tabulation is adopted here to make it easier for you to memorise the points.

QUESTION 5

The first and most obvious advantage of specialisation is that it permits each person and region to make the best use of differences in their skills and aptitudes, and in the resources and climatic and geographical differences of the regions. Even in a primitive economy it was soon discovered that it is beneficial for some degree of specialisation to be introduced; fat men could do the fishing while lean men did the hunting; a man with extremely good eye-sight might be chosen to stalk the prey, while the man who was good with his hands would specialise in beating out the necessary weapons.

The second advantage of specialisation is that it permits production to be carried out on a large-scale basis, and may make it possible to introduce new techniques. If, in our primitive economy, one man specialised in the construction of boats and another in sailing them, each would tend to become more proficient at his particular task than he would at either if he had to do the construction and the sailing. Such specialisation, of course, makes one specialist dependent upon the other and it is fundamentally the fact that our modern economy uses a high degree of specialisation which has led to its development to what is known as an exchange economy.

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USE THIS PAGE FOR MAKING NOTES

RETURNS AND PRODUCTION.

A. INTRODUCTION

In this lecture, we shall look at what is meant by "Returns and Production" and then develop a theory of how COSTS vary with ouput.

We can then consider how REVENUES vary with output in a later lecture.

B. "RETURNS AND PRODUCTION"

Almost from the moment of birth one expects some reward for endeavour, whatever form that endeavour may take. Thus, the baby howls dismally, and is rewarded with food; the child behaves badly, and is rewarded with punishment; you, grumbling at having to mow the lawn, ultimately find your twofold reward in the satisfaction of a job well done, and in the appearance of a smooth stretch of green sward.

A businessman expects his efforts to be rewarded with satisfaction, expressed in terms of profit, at the success of his business. In short, he expects RETURNS.

C. FACTORS ARE COMBINED IN PRODUCTION

Production, whether of commodities or of services, cannot be achieved by the use of only one factor of production; various proportions of some - or even, perhaps, ALL of these factors (land, labour, capital and organisation) are combined to produce the goods and the returns. Initially, only capital and labour may be usefully combined, but as the business expands, land (in the shape of primary products or raw materials) is needed in increasing quantities, and more

finance may be needed to expand the project still further. Naturally, differences in the proportions of the factors employed tend to exist: in view of the volume of work to be done, there may be a shortage of labour despite the sufficiency of capital. Thus a venture may be over-capitalised and under-staffed at one and the same time, or it may be over-staffed and under-capitalised; in either event, this disproportion in the use of the factors of production represents a flaw in organisation (which is the business of the entrepreneur), and will probably result in disappointing rewards - or, in economics terms, diminished returns.

The object in combining various factors, therefore, must be to find the most profitable combination, in order to keep costs down and profits up.

D. A "UNIT OF EFFORT" EXPLAINED

A "unit of effort" is the combination of two or more factors of production regarded, for the purpose of getting the job done, as one.

A very simple example is this:-

A farmer wants to mow his meadow, he needs the grass to pack a kilnful of bricks in. He cannot send one man (labour) to mow the meadow unless he has equipped him with a sickle (capital asset): the man without a sickle to use will be as useless as the sickle would be if there were nobody to wield it! But the two - man plus sickle - combined will be able to make the effort to mow the meadow, and are referred to in economics terms as one "unit of effort".

If more "units" are needed to complete the job, more men, each one armed with a sickle, will represent these additional units.

The following figures (entirely imaginary) might show the effect on output of the application of effort to the land:

Units of effort, i.e. Labour and Capital	Total Produced	Average Product per Unit of Effort	Additional produce resulting from extra unit of effort, i.e., <u>marginal</u> product
1	5	5	5 Bushels
2	12	6	7 "
3	27	9	15 "
4	38	9,5	11 "
5	45	9	7 "
6	50	8,3	5 "
7	54	7,7	4 "
8	56	7	2 "
9	57	6,3	1 Bushel
10	54	5,4	-3 Bushels
11	50	4,5	-4 "

An Analysis of this table shows that:-

(1) <u>A maximum average product per unit of effort</u> occurs when four units of effort are employed. This implies that the area of land is too large to be dealt with by fewer than four men; in other words, if only three men are available, it would pay to concentrate them on three-quarters of the land, leaving the other quarter uncultivated.

(2) <u>The maximum average product per unit of land</u> occurs when nine units of effort are employed. This is deduced from the column headed 'Total Produced'. If the farmer employs more than nine men, they tend to get in each other's way --- too many cooks spoil the broth.

(3) Marginal Product:

The term "Marginal Product" may be defined as "the additional product which results from the employment of an extra unit of effort". We must remember that it is not simply the productivity of a unit (or a factor of production) which determines the price we are prepared to offer for its services (called "the demand price").

It is the marginal productivity of that unit --- or, expressed differently, the value of the contribution to total output made by the last unit hired.

Assume a farmer is hiring workers, all of whom must be paid the same, and all of whom are equally efficient. He will (if he's wise) add to his numbers until the addition to the produce of his farm is just higher than the wages paid to the last one hired. (To employ one more would sacrifice profit; to employ one less would mean missing a small ("marginal") profit). The marginal unit thus earns a wage approximately equal to the productivity of his work --- and the other units (in this example) all earn the same, although their productivity is greater.

Look at the figures above:

If one unit is used, Marginal Product is 5

If two units are used, Marginal Product is 7

(12 - 5; the additional unit has resulted in 7 more bushels).

If three units are used, Marginal Product is 15 (27 - 12)

If four units are used, Marginal Product is 11 (38 - 27).

It is clear from this analysis that the farmer will employ not fewer than four nor more than nine units of effort. If he does, the average returns to neither land nor effort will be at the maximum level. The figure he utlimately decides upon will depend upon the relative cost of land and labour (or effort). But at the moment we need not pursue this aspect of the matter any further. For our present purpose it is sufficient to consider only one factor as variable. The unit of effort. We may then draw the conclusion that the variable factor will be used up to the point where the use of one additional unit of that factor would cause an increase in total product which is less than the cost of that additional unit. Thus, if the quantity of land used by the farmer in our example is fixed (i.e. if he had the land on lease he must pay the same rent regardless of whether or not he cultivates the entire plot) he will employ four men if the wages they demand are equivalent to the value of 8 bushels of wheat; he is still making a reasonable profit, for the average product of these four men is 9,5 bushels. If, however, he employes a fifth man at the same wage, their united efforts will produce only 9 bushels, giving him a negligible profit - the profit equivalent to only half a bushel of wheat. For so small a profit it is not worth his while to hire another labourer.

You should check these figures by reference to the table, noting the amount by which the farmer's crop exceeds his wage bill; then, for practice, adopt a similar procedure using other wage rates, but remember that the rate can never exceed the equivalent of 9,5 bushels, since this is the maximum average product per man. The number of men employed cannot, then, fall below four.

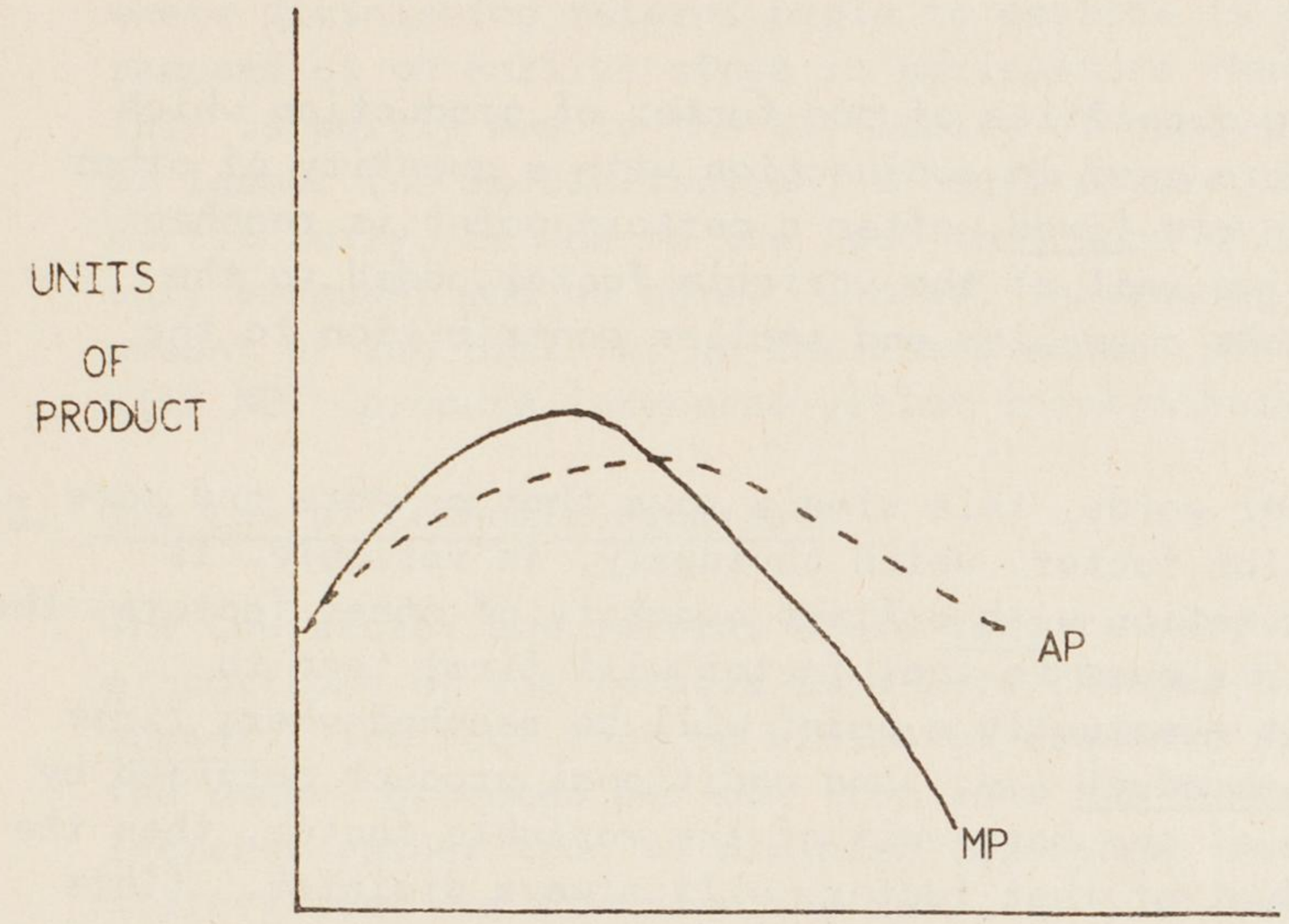
The same reasoning can be applied, of course, to any factor of production. In our example, we could quite easily consider labour as the fixed factor and land as the variable factor, compiling a table showing the average and marginal returns to each additional acre of land cultivated by, say, ten men. Then again, we

could consider agricultural machinery (or capital) as the variable factor to be applied to a fixed quantity of land and labour.

E. THE RELATION BETWEEN MARGINAL AND AVERAGE PRODUCTS

There is a definite relationship between marginal and average returns. In the table you will notice that at first both marginal product and average product increase; but although marginal product increases much faster than average product the former begins to decrease sooner than the latter. You will understand this if you remember that each increase in the marginal product must be "spread" over all the units of effort to arrive at the average product. Moreover, even though the marginal product decreases, the average product will still rise if the value of the marginal product is higher than the value of the average product for the previous number of units. It is only after a point has been reached at which marginal product and average product are equal that both marginal and average product decrease; but even then average product decreases more slowly than marginal product. (The table does not show the point where marginal and average product are equal because no provision is made for "fractions of a unit of effort" to be used).

The relationship between the average and the marginal products is shown in the following diagram:-



UNITS OF VARYING FACTOR PER UNIT OF FIXED FACTOR e.g. MEN PER SQ. KM.

MP - marginal product of varying factor

AP - average product of varying factor.

F. THE LAW OF DIMINISHING RETURNS

(Also known as the law of non-proportional outputs)

1. STATEMENT OF THE LAW:

This economics law is sometimes also referred to as the law of non-proportional returns; the law of non-proportional outputs; the law of diminishing marginal productivity, or the law of variable proportions. All these various terms mean exactly the same, since they all refer to exactly the same phenomenon.

You are advised to MEMORISE the following statement of this law:-

If increasing quantities of one factor of production which is variable are used in conjunction with a quantity of other factors which are fixed, after a certain point is reached each successive unit of the variable factor added to the whole will make a smaller and smaller contribution to the total output.

Put into other words, this simply says that as more and more of a particular factor, which obviously, is variable, is used in conjunction with a fixed quantity of other factors, the average returns owed to that factor will first tend to increase, but eventually a point will be reached where first the marginal product i.e., the additional product obtained by the addition of one more unit of the variable factor, then the average product of that factor, will always diminish. (This point is called Saturation point).

(2) The Law and Agriculture:

At one time economists applied the Law of Diminishing Returns only to agriculture. Even in the nineteenth century economists were saying that a different law, known as the Law of Increasing Returns, applied to manufacturing industry. Nowadays, however, it is widely recognised that there is only one law relating to the proportions in which factors of production are used. This law, as stated above, although it is known as the Law of Diminishing Returns, does not overlook the tendency for returns to increase at first. In other words, it incorporates the tendency to increasing returns while emphasising the undesirable fact that, after a certain point, returns can only diminish.

Nevertheless, it can safely be said that the application of the law to agriculture is more apparent. The point where diminishing returns begin to operate is generally reached at an earlier stage in agriculture than in industry. This is partly due to the difficulty of applying division of labour (or specialisation) in agriculture, but more particularly, is due to the fact that land will produce only so much, and no more. Indeed, increasing the amount of the bill for an increased amount of fertiliser will NOT produce increased yields indefinitely.

(3) The Law of Economic Progress:

The Law states how returns would tend to vary if the proportions of the factors used were changed at any given moment. The fact that by virtue of economic progress the amount produced per man from land has tended to increase rather than to diminish throughout recorded history does not disprove the Law. It just happens that the operation of the Law has been successfully postponed in the world as a whole; "the progress of knowledge has proved to be a stronger force than the tendency to diminishing returns" (Benham) - but only for a relatively short period.

(4) The Law of Diminishing Returns and the Law of Diminishing Utility:

The Law of Diminishing Returns is of universal application and refers to measurable, largely objective magnitudes. It is an inherent law of nature, the operation of which may be delayed by improvements in man's knowledge. The Law of Diminishing Utility, on the other hand, has a psychological basis; it refers to no inherent quality and it is not of universal applicability; it is a study of subjective, imaginary and immeasurable quantities. Utility is a factor which may vary from person to person, and any law relating to it can be applied only to the "average man".

G. RETURNS TO SCALE

We know from the law of diminishing returns what happens when we increase one factor of production. But what happens to output when we increase all factors simultaneously? This refers to the overall size or scale of production (Scale of production is looked at in greater depth in the next lecture). There are three categories which describe the possible responses of total output to changes in the scale of production.

(1) INCREASING RETURNS TO SCALE (Economies of scale)
Output increases more than proportionally with the increase in factors i.e., when the employment of all factors is doubled, total output more than doubles.

(2) CONSTANT RETURNS TO SCALE

Output increases by the same proportion as input i.e., when the employment of all factors is doubled, total output doubles.

(3) DECREASING RETURNS TO SCALE (Diseconomies of scale)

Output increases less than proportionally with the increase in inputs i.e., when the employment of all factors of production is doubled, total output less than doubles.

H. THE ALLOCATION OF THE AVAILABLE FACTORS OF PRODUCTION

Although the amounts of the various factors possessed by a community may be changed over a period of time, it is clear that at any particular time they must be taken as given, so that the possibility of the community having just that amount of each variety of factor which enables it to use all its factors, and yet use them in the most productive proportions, is very remote. We must now see, therefore, how this problem is solved.

Under a capitalistic or free enterprise system the distribution of factors between alternative uses is determined automatically by the price system; in a socialist system it is determined by the dictator or central authority.

The principle of marginal productivity enables us to understand why it may not be unprofitable for a country to leave certain of its resources unused. Factors of production are used in co-operation, and if the utilisation of a particular natural resource means transferring labour or other factors away from uses where it produces a greater return per unit, the cost (in terms of sacrificed alternatives) would exceed the product.

The same principle applies to the introduction of new inventions. The increased production in a particular direction which the new machinery would give, and the cost of scrapping the existing machinery must be set against the cost of transferring labour from its present employment and utilising savings for manufacturing new machinery incorporating new ideas. In some cases, the most profitable course may be to ignore the invention, continue to use the existing machinery, and use the limited savings for some other purpose.

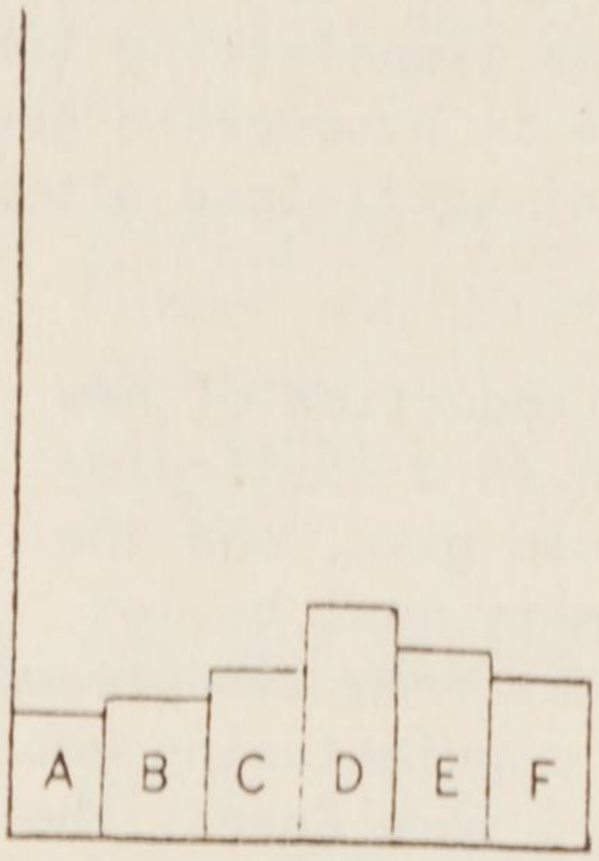
SPECIAL NOTE ON MARGINS AND AVERAGES

As the principle of margins and averages will recur at other stages in your studies of economic analysis, I am inserting here a special summary of the basic features of these:

(1) <u>The sum of the marginal products up to a point is equal to the total product at that point</u>:

The truth of this is apparent from the second and fourth columns of the table on page 3 of this lecture, but it can be shown diagrammatically as follows:

<u>Diag. 1.</u>
Marginal
Products



<u>Diag. 2.</u>
Total
Product

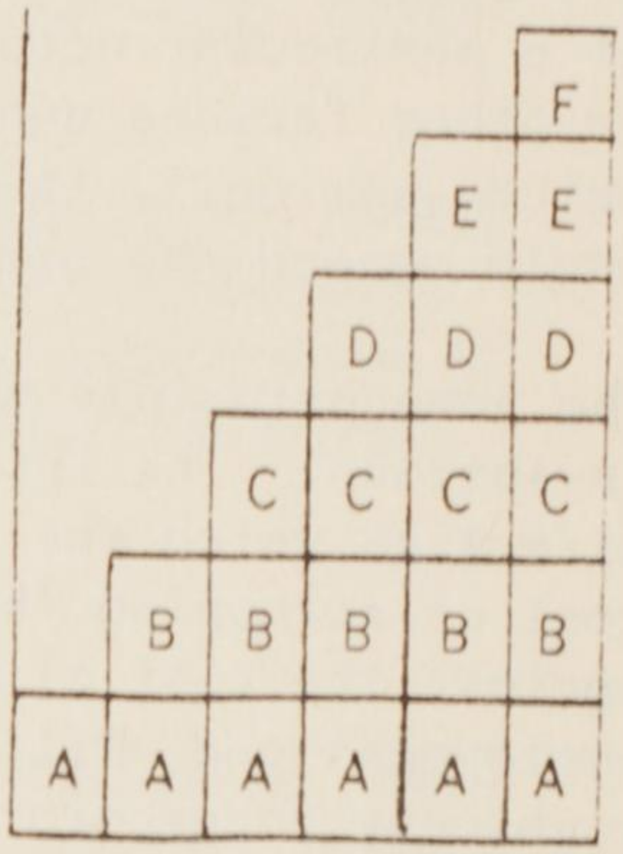


Diagram 2 shows that the total product for any number of units of effort is equal to the sum of the marginal products of each unit up to the number of units in question. This total product for 5 units of effort = A + B + C + D + E = sum of marginal product of first unit (A), marginal product of second unit B, marginal product of third unit C, and so on.

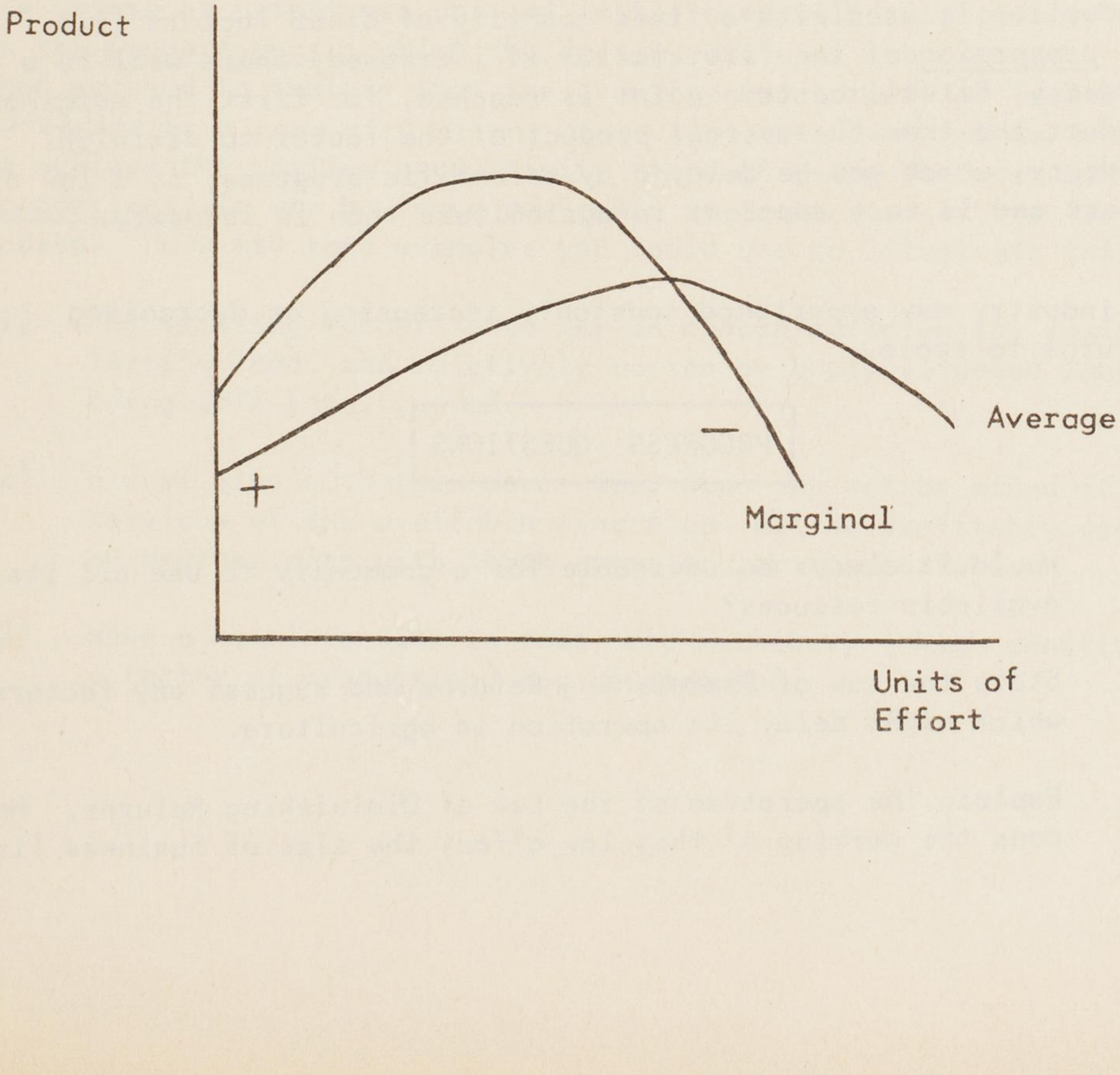
Note: Total product may be quoted as so many units (e.g, bushels), but average product must be quoted as so many units per unit of effort.

(2) When average product is increasing, marginal product is greater than average product.

(3) When average product is decreasing, marginal product is less than average product.

(4) When average product is at a maximum, marginal product equals average product.

These three features follow from the reasoning given on page four and five of the Lecture, but they may be shown in the form of a graph as follows:



SUMMARY

In most productive operations the proportions of factors are variable. The object of producers is to find the most profitable proportion. This will be, where two factors only are considered as variable, somewhere between the points of maximum average product to each factor. If one factor only is considered as variable it will be used up to the point where the marginal product of the factor is worth less than the cost of the last additional unit of factor. Since this cost is what the unit could earn in another undertaking (i.e., its maximum marginal product elsewhere) it may be said that there will be no inducement to transfer factors from one use to another when the marginal product of all factors is the same in every line in which those factors could be employed.

The Law of Diminishing Returns states that as more of a factor of production is used with a fixed quantity of other factors (i.e., the proportion of the first factor is increased) there will be a tendency, after a certain point is reached, for first the marginal product and then the average product of the factor to diminish. This tendency, which may be delayed by scientific progress, is a law of nature and is more apparent in agriculture than in industry.

An industry may experience constant, increasing or decreasing returns to scale.

PROGRESS QUESTIONS

1. Would it always be advisable for a community to use all its available resouces?

2. State the Law of Diminishing Returns and suggest any factors which might delay its operation in agriculture.

3. Explain the operation of the Law of Diminishing Returns. How does the working of this law affect the size of business firms?

4. Explain carefully why manufacturers aim at producing on a scale of output where marginal cost is equal to marginal revenue.

5. The wise producer and the wise consumer use the same approach in solving their basic economic problem. Discuss.

6. Explain the relationship between the marginal and average product, and the Law of Diminishing Returns.

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GUIDES TO THE ANSWERS

QUESTION 1.

To begin your answer to this question you should explain that factors of production must be combined in production, and that the volume of output per unit of factor used will tend to vary as the proportions in which the factors are used are changed. Then proceed to explain that the quantity and variety of factors possessed by a community at any given time are fixed and in order to achieve the maximum productivity (through using the correct proportions) it may be found advisable to leave some of the factors unused. Here are some examples you could use to illustrate this point:

(1) The existing labour force may be concentrated on the most fertile land, and relatively barren or badly situated land being left uncultivated.

(2) A coal mine with thin seams deep down may not be mined if the services of the available miners can all be profitably used on another mine with thick seams nearer the surface.

(3) When a new invention is made, old machinery (which constitutes a factor of production) may be scrapped.

QUESTION 2.

Your first task here is to state the Law of Diminishing Returns (See Answer 3 below).

The tendency of returns to diminish cannot be obviated (i.e., prevented), but the operation of the Law can be delayed. To the extent that science succeeds in providing this delay, economic progress is achieved. The following extract from "Economics" by S.E Thomas details some of the steps which may delay the operation of the Law in Agriculture.

> "In many cases man can speed up the growth of the plant; by careful attention and painstaking selection he can increase the yield of fruit from a tree or of meat from an animal; by the rotation of crops, scientific fertilising, and the judicious mixing of soils, he may increase the yield from his land; and by giving attention to costing, using mechanical applicances and co-operating with the fellow agriculturists, he may lessen his expenses and increase his margin of profit. Transport also increases agricultural efficiency; in fact, Adam Smith called improvements in the means of communication 'the greatest of all agricultural improvements'."

QUESTION 3.

The Law of Diminishing Returns states that as more of a particular variable factor is used in conjunction with a fixed quantity of other factors, the marginal and average returns to that factor will at first tend to increase, but eventually a point will be reached where first the marginal product and then the average product of that factor will diminish.

Ricardo, the English economist, first pointed out the application of the law to agriculture.

Whereas the amount of capital and labour applied to land could be increased, the quantity of land itself was limited by nature. It followed that if ever-increasing quantities of labour and capital were used in conjunction with the same quantity of land, a point would be reached where the product would diminish. The price of the product would determine at what point it would cease to be profitable to use more labour and capital to derive a diminishing return from the same land.

An example will serve to elucidate the argument:

Units of Labour and Capital.	Total Product	Average Product	Additional Produce from the last unit, i.e., the Marginal Product.
1	4	4	4
2	10	5	6
3	18	6	8
4	24	6	6
5	28	5,6	4
6	30	5	2

The Law is of universal application, but more noticeable in the case of agriculture.

The factors of production are more easily increased in industry than in agriculture. But in the case of sudden changes in demand the Law operates in industry as well. For example, assume that there was a sudden increase in demand for railway transport; certain items of fixed capital, e.g., the permanent way, could not be increased immediately and the application of more labour to the same amount of capital would result in a diminishing return and a rise in the railway tariff.

If the supply of the factors of production can be increased, then each will be increased up to the point where the Law of Diminishing Returns commences to operate --- this will determine the proportion each factor will bear to the others. Provided a business firm keeps to these proportions, it can, theoretically, be any size.

In practice, however, the following limiting factors will tend to reduce the size of the business unit:

(1) The demand for a product may be so small that though it has been profitable to install one machine to produce the goods, the installation of a second machine would increase the supply to such an extent, perhaps, that the Law of Diminishing Returns coming inevitably into operation and the supply now exceeding the demand into the bargin, the price of the article would be in danger of falling to a level below the cost of its production.

(2) All the factors of production can be increased except that of entrepreneural capacity. As the unit increases the problems of management become so intricate and widespread that the Law of Diminishing Returns operates to limit the size of the firm.

QUESTION 4.

This is fully dealt with in the Lecture and in the special note and no additional information is required.

QUESTION 5.

Marginal Rate of Substitution:

If it is possible for a consumer to select different combinations of two goods which yield the same satisfaction (total utility) then the rate at which one good is substituted for the other can be determined. That is the quantity of one commodity or service that is required to compensate the consumer for the loss of one unit of the other commodity service. This is the Marginal Rate of Substitution.

It is possible for one of the goods to be money, so that marginal rate of substitution is resolved according to the price of the other good.

This equimarginal principle need not be limited to consumers; it could be an entrepreneur's choice between alternative factors of production.

Law of Substitution:

(1) Consumption:

It is held that a consumer (buyer/purchaser) obtains diminishing utility from successive units of any economic good consumed (bought) and therefore will not buy beyond that point at which the 'marginal utility' of a unit is equal to the price of it (i.e., the point at which there is no more consumer's surplus). In a situation where a consumer is faced with a number of goods or services, the problem is to choose so that the total utility from the combination chosen is greater than the total utility of any other combination. This involves many decisions about substituting: the substitution of one good or service for another will occur at the point where their marginal utilities are equal. This is a position of 'equimarginal utilities', towards which economists say there is a tendency to move. A consumer tends to adjust his purchase of different economic goods in such a way that the marginal satisfaction derived from them are equal.

(2) Production:

The argument is the same as the above, but the producer has to choose between factors of production, judging by production rather than utility.

QUESTION 6

This can easily be obtained from the lecture notes.

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USE THIS PAGE FOR MAKING NOTES

THE SCALE OF PRODUCTION.

A. INTRODUCTION

We have so far concerned ourselves only with the proportions in which the various factors of production are used. We must now pay some attention to the quantities of factors, i.e., to see what determines the scale of production.

First of all, we must pause to make sure of the exact meaning of the terms we shall be using.

B. INDUSTRIES, FIRMS AND PLANTS

An industry generally consists of a number, sometimes a very large number, of firms. It is concerned with the production of a particular type of commodity or service, or with the production of a number of similar or related products or services. Thus we talk of the mining industry, the timber industry, and so on.

A firm is an organisation which produces a commodity or a service. It can be termed a unit of production whether it is a shop, a factory, or a field. Obviously, it has reality - it exists, and it operates in an economic sphere, thus it is an economic entity.

The combination of such agents of production into some kind of partnership, or co-operative body, represents another kind of reality; its existence is recognised and thus regulated by the law of the land in which is operates - in short, it is not only an economic entity, but a legal entity as well.

"Plant" is the collective term for the equipment and the machinery, etc. used in the production of the commodity. It is often housed in a building or buildings separate from the "administration block".

In some cases a firm may consists of only one plant, but in others it may consist of a number of plants situated in different parts of the country, or even in different parts of the world. For example, the manufacturing firm of Joy (it used to be called "Joy-Sullivan") has enormous plants in Detroit, U.S.A. in Steeldale, Johannesburg (where it manufactures coal-loaders and compressors, etc.,) and in Paris.

It will obviously be important to discriminate carefully between industries (such as the mining industry, or the packing industry, etc.), firms and plants when considering the scale of production.

C. THE SIZE OF PLANTS

(1) Advantages of Large Plants

A large plant can generally be operated more economically than a small one because:

(a) There is a greater scope for the division of labour.

(b) Better use can be made of by-products, and wastage is likely to be less.

(c) A large output may justify the installation of such devices as a special railway siding, thus avoiding delays in despatch and delivery, or the laying of a complicated network of rails along which small trolleys can be pushed from one part of the area to another, thus not only speeding up the process of production but also affording physical relief to the men who have to transfer heavy loads from hither to yon. Corobrick, at Umgeni, affords an excellent example of this, as do the little coco-pans used on the Witwatersrand mines.

(2) Limitations to the Size of Plants

There are certain limitations, however, to the extent to which a plant may expand advantageously:

(a) The demand for the product. In a few cases the size of the plant is limited by the total demand for the product because the world output comes from one plant. In most cases, however, it is the local demand which is the influential factor. If the output of a plant is increased, it is probable that it will have to be spread over a wider area if all of it is to be sold.

Distribution costs will tend to increase and to offset the economics referred to above. This effect will be more important where the product is perishable or bulky, or where it is made to the consumer's specifications.

(b) The indivisibility of equipment. Some factors of production are indivisible into small units, and because their installation will not be profitable unless they can be kept in fairly full use, there will be a tendency for the plants which use them to expand in jerks.

(c) The chief difficulty in the way of unlimited expansion is that of management and highly skilled Labour, e.g. accountants, teachers, engineers, especially in the new dynamic countries such as Australia and R.S.A.

(1) Effective supervision becomes increasingly difficult with each increase in the size of a business.

(2) In short, expansion of a plant is profitable as long as production is subject to increasing returns, and the operation of any of the above limitations may cause diminishing returns to set in.

D. THE LOCALISATION OF PLANTS

(1) Proximity to Power

With the development of electricity, which can be carried long distances, the importance of the proximity to power has diminished, while those industries which require comparatively little fuel can be economically pursued at some distance from the coalfield where other advantageous factors (e.g., proximity to markets) come into play.

(2) Proximity to Raw Materials

The extractive industries, such as mining, quarrying and sea-fishing, are necessarily localised in the neighbourhood of their supplies, but in the case of other industries, unless the material is bulky or highly perishable, the presence of a cheap and efficient transport system tends to minimise the importance of this factor.

(1) and (2) may be considered as rival factors, for in very few cases is it possible for a plant to be located in proximity to both power and raw materials. The relative importance of each of the two factors will depend on the transport charges which would be incurred in each case. If there is very little difference, other factors may weigh the balance.

(3) Physical and Climatic Conditions

The localisation of a plant is also influenced by natural conditions (other than raw materials and sources of power) when these provide:

(a) Special transport facilities, e.g., advantageous situation in relation to ports and rivers.

(b) A climatic environment specially suited to the particular industry, e.g, tanning, in the Natal mist belt.

(4) Proximity to Markets

The relative importance of proximity to markets compared with the proximity to raw materials depends largely upon the bulk of the finished article, particularly in industries such as engineering.

A business which involves the rendering of a personal service must necessarily be carried on in proximity to the market which it supplies. Other factors are:-

(a) Density of population in the area under consideration. The more people there are, the bigger the market.

(b) Purchasing power of the people in that area.

(c) Transport facilities.

Note also that as the market becomes more widely distributed it exercises less force as a localising factor.

(5) Labour Supply

A plant tends to be set up where there is an adequate supply of labour already in existence. The supply of unskilled labour is generally adequate; it is in the higher ranks of craftsmen that difficulty is met. Furthermore, the centralisation of an industry in one area results in the development of a pool of specialised labour.

(6) Association with other Industries

In spite of - and indeed, often because of - the keenness of commercial rivalry, factories thrive best in groups. A number of similar plants in a locality can usually secure materials at better rates on account of bulk deliveries while a group of similar or related plants

established in one place serves to create a goodwill for their goods. The reputation of each firm supplements that of the others, until the name of the town becomes almost a trade mark, and a firm enjoys prestige from the mere fact that its plant is in the noted place, e,g, Sheffield steel, Dresden china.

(7) State and Municipal Laws and Regulations

These also influence localisation to a limited extent. The annual rates or taxes imposed by the authorities, the permanence and stability of the municipal laws and the reputation of the local authority, are all taken into consideration when a large plant is being set up.

The price of land and its rateable valuation will be particularly important items to concerns which need a large area of land, e.g, aeroplane and railway works.

(8) Geographical Inertia

Except where artificial transfer takes place as a result of political or other unrest, the tendency is for plants to remain where they are, even though the initial factors which attracted them no longer obtain. This tendency is known as "geographical inertia", and the reasons for it are:

(a) The skilled labour supply --- difficult to persuade to move to new towns.

(b) associated or subsidiary industries that are useful to the industry concerned.

(c) the cost of moving the plant and erecting this in new buildings.

(d) the reputation of the original locality for the type of goods manufactured, and the habit of buyers to continue to buy in markets to which they have been accustomed.

PRACTICE EXERCISE

Differentiate between an industry and a plant.

Give 3 advantages of a large plant

List 8 factors to take into account when determining the location of a plant

E. THE SIZE OF FIRMS

(1) The survival of the small firm

The small firm has an important role in a laissez faire economy such as that of South Africa and the U.S.A., for its encourages initiative and gives scope to inventiveness and ingenuity. In this regard one immediately thinks of Zimbabwe, where the use made of these invaluable attributes made it possible for the country to survive fifteen years of trade sanctions.

In a depression or an inflationary period, however, the small firm too often quietly disappears; the large firm has the undoubted advantage of lower costs, and the large firm which is able to diversify it's products can offset a loss in one line against a sizeable profit in another.

The advantages of the small firm are many; some of these are outlined below, but an interesting exercise would be for you to think up some advantages for yourself.

(a) Where the demand for a commodity or a service is small, or the market rigidly limited owing to the

smallness of the population in a certain area, the small firm comes into its own; in the small towns and villages dotted here and there on the face of large expanses of practically empty country such as the O.F.S. for example, or the Northern Cape, the small firm is indispensable.

(b) Personal service is impossible in a very large concern; only the small firm can offer this.

(c) Its persistence in surviving offers an opportunity to those who prefer to be self-employed rather than lose their individuality in the anonymity of a large outfit.

(d) Large firms often "farm out" to small firms parts of processes which it would not be worth their while doing themselves; thus the small firm supplies a need within an industry while simultaneously preserving its own independence.

The difficulty of finding enough capital to weather economic storms continually threatens the continued existence of the small firm, however, and the tendency is therefore to merge, or integrate, with other small firms, or to be bought out by a large concern.

(2) Advantages of a Large Firm

A large firm may enjoy the following advantages over a relatively small firm:

(a) It can operate large plants and profit from the advantages of large-scale manufacture, or it may operate a number of scattered plants and profit from the advantages of a suitable locality.

(b) The big undertaking can afford to carry out experiments and research on a large scale.

(c) By buying the requirements for serveral scattered plants through one central buying office, the firm may profit from the economies of bulk buying.

(d) Greater expense can be incurred in publicity and advertising without adversely affecting profits; indeed, the converse usually applies - "it pays to advertise".

(e) Large organisations can afford to pay their executives extremely generous salaries which, together with perquisites and bonuses, attract to the firm the best brains and the greatest skills and initiative.

(f) The large concern is less affected by market fluctuations than is the small firm. It can lay in sufficient stocks of raw materials to render it comparatively independent of changes in supply for some time. These stocks are usually referred to as "massed reserves", or "buffer stocks". The problems confronting the smaller concern in attempting the same process is the problem of warehousing.

(g) Large retail firms and supermarkets also enjoy a great advantage over small firms when it comes to the question of taking advantages of considerably reduced costs of non-perishables if they buy in bulk from their wholesalers; they have warehousing facilities of their own, and are thus able to lay in large reserves without extra cost to themselves. This the small firm cannot do, so it is obliged to forego bulk buying; thus it cannot afford to keep pace with the low prices which the supermarkets mark up.

(The small concern scores, though, when prices are suddenly forced up: it can sell almost immediately at the new prices while the big retailers may be forced to dispose of their old stocks - their massed reserves - before they can take advantage of the new prices).

(3) Limitations to the size of firms

Just as there are limitations to the expansion of a plant, so there are limitations to the expansion of a firm:

(a) Finance --- The possibility of borrowing the money necessary for expansion at a reasonable rate of interest.

(b) Loss of control as the business expands --- there is a limit to the size of efficient organisation.

(c) The ultimate controlling factor in determining the size of a firm is, however, profits. A business-man will try to bring his output to that level at which his profits are at a maximum, i.e., when the difference between his revenue and his costs is at its greatest. The points we have been considering above affect his costs; we must now consider the revenue aspect.

(d) Since the ultimate controlling factor in determining the size of a firm is the profits it will be able to make, all things being equal, the question of cost is of great importance; one can go even further and say that the cost of production may well determine whether the commodity mooted will go into production at all. (The consumer, searching vainly for some article which used to be readily available, hears repeatedly: "The cost of it is too high these days to make it a profitable line: have you tried the second-hand dealers?").

(4) Optimum and Representative Firms

As we have seen, an industry may be defined as a group of firms producing similar products or offering similar services, but it may include firms whose products are not similar as they are not close substitutes for one another, for example the coal mining industry includes firms producing household coal and steam coal. The demand for one may increase while the demand for the other falls, and their prices may diverge considerably.

It is also possible that a firm may belong to several industries at once, producing, for example, coal, steel and machinery.

Our reasoning so far has paid no attention to competition. If one producer succeeds in making high profits, others will be attracted into the industry. This will make it more difficult for the first producer to sell his output and his profits will tend to fall. A position of equilibrium may eventually be reached at which no producer is making either losses or abnormal profits. There will then be no tendency for new firms to come into the industry or existing firms to go out of it. If each firm has an equal share in the market, each is making normal profits and will produce that output at which average costs (i.e., the average cost per unit of output) are at a minimum. Each firm will then be of optimum size.

In practice, however, there are a number of factors which tend to interfere with the attainment of this position of perfect equilibrium. For one thing, competition is rarely such that each firm gets an equal share in the market. The result is that some firms are larger and others smaller than the optimum size at any particular time. Secondly, the size of the optimum firm itself tends to change as new inventions are made and business management becomes more efficient. The more progressive firms utilise these new inventions and methods, but others may lag behind.

To overcome this difficulty in economic analysis, Alfred Marshall coined the term "Representative Firm" to indicate the average firm in any particular industry at any particular time.

F. ECONOMIES OF SCALE

Careful note must be made of the significance of the word "economies", which you are about to study: the meaning here is rather broader than ordinarily, when it has the sense of cutting down expenditure in order to make one's cash last longer and go further. Here, it refers to the careful management or administration of both resources and production with an eye to growth of the industry.

Some economists make a sharp distinction between "internal" and "external" economies, but at this stage it is not necessary to go deeply into the distinction; it is enough to remark that economies arising from the growth of a firm are regarded as internal economies, and refer to savings effected in the technical process employed in the firm, and generally speaking, the various savings achieved by sound management.

There are certain economies, perhaps beneficial to an entire industry, which tend to come about with economic development, and which accompany the expansion of the whole industry; a single firm could not obtain them by expanding alone. From the point of view of the plants and firms in the industry affected, these are referred to as external economies.

When an industry expands by means of the growth of existing firms and the establishment of new ones, this often takes place in a particular district. It may then pay other firms to specialise more in catering for the needs of the industry.

Some examples of external economies which may follow the expansion of an industry are as follows: fuel and raw materials may be more readily obtained; labour and capital are specially adapted to the industry; special banking

and insurance facilities may be made available; special transport and communication facilities may grow up, and transport rates may be reduced owing to the greater volume of traffic; freight rates may fall because existing road or rail facilities can now be used more fully; subsidiary industries may spring up which utilise the products of the parent industry and supply it with the necessary machinery.

Similarly there may be external diseconomies such as the need for greater supervision and a closer adherence to routine, higher costs incurred through such things as congestion of the distributive service, congestion on the roads of the district and higher prices for raw materials. Relations between management and employees become increasingly impersonal, and this discourages enthusiasm and makes decision-making difficult.

Internal economies of scale can be distinguished into real and pecuniary economies of scale.

Pecuniary economies of scale are realised from paying lower prices for the factors of production, generally as a result of bulk-buying by the firm as its size increases. Real economies are those associated with a reduction in the physical quantity of inputs, raw materials, various types of labour and various types of capital. An example is the specialisation of capital equipment which becomes possible only at large scales of production.

G. INTEGRATION AND SPECIALISATION

So far we have not considered the possibility of economies inherent in the growth of a firm: the production of other products which are related to, or are components of the main product (e.g., a soap factory opening a new department to manufacture its own packing boxes, or a car assembly plant manufacturing its own paint). This is called integration though, as we shall learn later on, when this integration of processes or manufactures involves amalgamation with another existing business, it may be called "vertical combination".

The degree of integration which is advisable in a particular undertaking will depend upon:

(1) Technical factors peculiar to the particular industry.

(2) The importance of a regular, assured supply of raw materials of known quality, and the importance of transport costs in the production of raw material. A printing works is not likely to establish its own paperworking department because many different kinds of paper would be required to meet customers' requirements, and in the manufacture of paper there are important economies of scale. In this instance, the advantage of specialisation outweigh those of integration.

(3) Conflicts in location advantages. A bulky raw material may lead to the establishment of a processing plant near the source of supply in order to save transport costs, but the advantages of locating a factory which produces the finished product near the market may outweigh the advantages of integrating the finishing process and the original processing of the raw material.

H. FORMS OF ORGANISATION

We have seen that the manner in which the various factors of production are brought into combination is very important. Unless they are combined in the right proportions the resultant output, or return, will not be as great as it might be. Moreover, we have also seen that the return per unit of factor will tend to get larger as the scale of output is increased, provided that the factors continue to be used in the same proportions.

A severe limitation is imposed on the possibilities of expansion, however, by the difficulty of ensuring effective co-operation between large quantities of factors. In other words, the advantages of large-scale production tend to be offset by the disadvantages of large-scale organisation. This applies to plants as well as to firms, but it is much more important from the point of view of a firm.

It has long been realised that the part played by organisation in production was a very important one, and when economists considered land, labour and capital as individual factors of production, instead of as groups or "bundles" of similar factors, there was a tendency for organisation to be given as the fourth factor of production.

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SUMMARY

An industry is concerned with the production of the same or similar goods and services.

A firm is an organisation of agents of production.

ECONOMIES OF LARGE PLANTS result from:

(1) Division of labour.

(2) Less waste and use of by-products.

(3) Installation of labour and time-saving devices.

But the expansion of a plant is limited by:

(a) Demand for the product.

(b) Indivisibility of equipment.

(c) Management difficulties.

LOCALISATION OF PLANTS

The factors influencing the localisation of a plant are:

(1) Power.
(2) Raw material supplies.
(3) Physical and climatic conditions.
(4) Markets.
(5) Labour supply.
(6) Situation of associated industries.
(7) Laws and by-laws.
(8) Geographical Inertia.

ECONOMIES OF LARGE FIRMS result from:

(1) Operation of large plants.
(2) Experiments and research.
(3) Centralised bulk buying.
(4) Advertising.
(5) Efficient and highly paid executives.
(6) Less affected by market fluctuations.

But the expansion of a firm is limited by:

(a) Finance.
(b) Management difficulties.
(c) Profitability.

Where there is competition, firms will tend to be of optimum size, i.e., where average costs are at a minimum. To take into account imperfections in competition and economic progress, Marshall referred to the Representative Firm.

Industrial development may bring external economies to firms, but to some extent these may be offset by external disadvantages.

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PROGRESS QUESTIONS

1. How is it that in an industry in which increasing returns tend to operate, small firms operate side by side with large firms?

2. What are the economic considerations which will influence a business man in deciding where to locate his factory?

3. What causes may enable production to be carried out under conditions of increasing returns (i.e., decreasing unit cost) as the scale of production increases? Why does not such a tendency continue indefinitely?

4. Examine carefully the benefits of "large-scale production" and relate your answer to the position of secondary industry in the Republic of South Africa.

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GUIDES TO THE ANSWERS

QUESTION 1.

"An industry is said to be working under conditions of increasing returns when an increase in the factors of production used will result in an increase in the average returns per unit of factor, or in other words, a reduction in costs per unit of output. There are several reasons, however, why a particular plant may not operate on the scale where the average cost per unit of output is at a minimum, i.e., at the optimum size.

In the first place, a firm may not have sufficient turnover to reach the optimum scale of production. Because of transport difficulties, because the article is perishable, or for other similar reasons a firm operating near optimum size may not be able to expand its market to reach optimum size. Thus, in such industries as brickmaking, bread baking and laundries, difficulties of this nature are likely to be found.

Secondly, the size of the optimum firm itself tends to change as new inventions are made and some businesses react faster than others to the new developments. In industries concerned with electricity, the production of motor cars, wireless and television sets, new developments occur so rapidly that the production equipment is always tending to become obsolete, and there is reluctance to sink capital in a large-scale undertaking.

Although such articles as men's suits or ladies' gowns may be produced relatively cheaply under large-scale methods, there are still many people who prefer to pay more to smaller concerns and get the personal attention they provide. Again in the case of such articles as furniture or glass lenses, some people prefer to pay higher prices for the products of individual craftsmen.

QUESTION 2.

If we assume that the businessman is a "rational" man in the economic sense, and wants to make as much profit as he can, then clearly he will choose a site which enables him to produce more efficiently, i.e., at the lowest cost per unit of output.

Regarding each individual requirements separately, i.e., proximity to raw materials, proximity to the market, availability of power, etc, it is unlikely that one particular site will be wholly satsifactory. The businessman's problem will be to offset the advantages of any particular site against its disadvantages; he will have to decide upon the relative importance of each individual localising factor in the degree to which it can be obtained.

Note: In the examination you will then proceed to discuss the various localising factors in essay form. These have already been given in the Lecture; here I would merely like to add some examples.

Power: Electricity is not such a strong localising factor as coal and water were, when these were the usual forms of power. Indeed, in order to attract industries it is possible that many local authorities would set up new power stations to meet a new demand for electricity.

Jams, dried fruit and fruit-canning industries are usually near the source of raw materials because of their high perishability. The same applies to fish-canning. Mineral ores which have a low metal content are likely to be smelted near the mines: e.g. copper in South Africa and Zambia. Motors are usually assembled near a centre of population because the finished product is bulky and therefore may present transport problems.

QUESTION 3.

You will find the economies of large-scale production set out in Section C of this lecture and immediately thereafter are given the reasons why these economies do not increase indefinitely as the scale of production increases.

QUESTION 4.

At the beginning of the Lecture the advantages of large plants are very concisely summarised but by now you will appreciate that it is the ratio in which the various factors of production are used which determines productivity. Taking into account the state of technology at any particular time there is a "best" ratio in which the factors of production may be used. For each set of specified contribution of various factors of production there is a fixed maximum output and the relationship between these two is described by economists as the production function.

Once the most effective ratio of factor contributions has been discovered, the limitations to the rate of growth of industrial units are as described in the lecture. In the case of the Republic of South Africa, market limitations are important and a general policy is to increase the scope of the market by increasing the purchasing power of the black workers.

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USE THIS PAGE FOR MAKING NOTES

FACTORS OF PRODUCTION.

INTRODUCTION

Before we proceed to the next main section of study, it is advisable for us to pause awhile to study in greater detail some of the characteristic features of factors of production, adopting the customary division of factors into land labour and capital. In this way we shall not only become better acquainted with these terms and appreciate better the part they play in the economic structure, but we shall also gain some idea why this customary classification seemed a good one to economists of the last generation. In our study of these factors we will pay special attention to the MOBILITY of the factors of production.

A. THE MOBILITY OF THE FACTORS OF PRODUCTION

At any given time a community has a certain quantity of land, labour and capital available for production. We have now to find out to what extent these factors of production are capable of alternative uses. Some factors e.g., specialised machines, are capable of only one use in which case they are said to be completely specific. If every factor were completely specific, there would be little choice as to what assortment of goods and services could be produced. But actually most factors are capable of alternative uses, and therefore a given quantity of factors can produce many different assortments of goods and services. Furthermore, some factors can be changed into or replaced by others, thus further increasing the variety of what can be produced.

Production is a long and complicated process, involving many stages and the use of many different kinds of factors. Hence a given factor may change its contribution to the final product in either of two ways:-

(1) It may continue to render exactly the same kind of service as before, but the service may be utilised in a different way. Thus a salesman may move from one kind of business to another without changing the nature of his work or a piece of land may be used for the erection of a different kind of building, e.g., a factory instead of a dwelling.

(2) It may change the nature of its service. Thus a salesman may become a clerk, or a piece of land may be used for mining instead of being used for the erection of a building.

It is to the entrepreneur's advantage to produce that assortment of goods which consumers most prefer, and to change the composition of the total output in response to changes in tastes of consumers and in the state of technical knowledge. The extent to which changes in output can be made depends on the extent to which factors of production can be transferred to other industries or occupations or places - that is, on their mobility.

B. LAND

Natural resources are of vital importance to a nation's wealth. The foremost nations of the world are those whose natural resources are richest and most productive. Britain's great mineral wealth, especially coal and iron, her georgraphical position, her climate, her indented coastline and abundance of natural harbours and navigable rivers, enables her to become supreme in industry. The prosperity of the United States is also largely based on the wealth of her natural resources.

Land as an agent of production is in three important respects on a different footing from other agents:

(1) It is limited in quantity, or in area.
(2) Areas differ greatly in fertility.
(3) Areas differ in situation and accessibility.

Modern economists claim that these distinctions are meaningless from the point of view of economic analysis. It is not the the total supply of any factor which is important, they allege; it is the supply in relation to the demand which must be considered. Agricultural land should not be considered the same factor as land in the middle of a town ten miles away. Land which can be changed from one use to another relatively easily is said to be "mobile". If it is suitable for only one, or a limited number of uses, it is said to be "specific"

By the mobility of land we mean not, of course, its physical movements, but the extent to which it can be put to other uses; in fact it is better to use the word "specifically", in regard to land. Much land is completely immobile - thus in many parts of this country the soil is too poor to grow crops, though it may be good enough for stock-raising, or it may contain mineral ores. But most land is capable of a considerable range of different uses, though the potential uses of an area are limited by the climate and the nature of its soil. Some investment of capital is usually required, however, to convert land from one use to another, and considerable time may have to elapse before the supply of a given product can be substantially increased.

A good example of a change in the use to which land is put is afforded by the transfer from grain-growing to stock-raising in Britain during the present century. In South Africa, irrigation schemes (e.g., dams to conserve water from the rainy season) have transformed much of the barren land into fertile and productive tracts, e.g., the Orange River irrigation project in the Northern Cape has produced results which merit the word "fabulous": it must be seen to be believed!

C. LABOUR

1. Special features of labour:

Labour has a number of special features which distinguish it from the other agents of production. These characteristics are:

(a) A man's labour is part of himself:

A man may sell his labour, but he retains the property in himself, and has to deliver it himself. The efficiency of labour depends largely on the personal qualities of the worker.

(b) Labour cannot be stored:

Unless labour is applied when and where it is required it cannot be regained, but is lost for good.

(c) The worker is at a disadvantage in bargaining:

This follows from the fact that labour power cannot be stored. The worker is unable to hold out for long against the employer who can afford to wait, and who usually has large reserves of capital. This argument has been contested on the grounds that an employer cannot recover the losses from idle capital.

(d) The supply of labour can be increased but slowly:

If more labour is required for any particular industry the supply can be augmented by an increase in the labour force trained for that employment. If there has not been a concurrent increase in the size of the working population, however, this shortage will necessitate a movement of workers from other trades.

(e) Labour is relatively immobile:

The "mobility of labour" is an important topic and requires careful consideration.

There are three chief forms of mobility:

(i) Geographical mobility:

This refers to the extent to which labour can be transferred from place to place. Many personal factors hinder free movement, among them being the cost of moving, patriotism, national and family sentiments, religious principles, apathy, ignorance, affection for a certain locality, or appreciation of life in the country as opposed to life in the town.

(ii) Vertical mobility:

This is the movement of labour from one grade of an occupation to a different grade, e.g., a clerk becoming a secretary, or a machine operator a works manager. The absence of ambition and the necessary qualifications and experience tend to restrict vertical mobility.

(iii) Horizontal mobility:

Under this heading comes movement from one grade in one employment to the same grade in another. This is not so much influenced by personal factors, and in certain occupations horizontal mobility is fairly common. Bricklayers and carpenters, for instance, move fairly readily from one job to another, but where the occupation is highly specialised, mobility is less in evidence. Specialisation has had the effect of

considerably lessening the mobility of labour between industries, even though the nature of the work is of the same type, e.g., we find mine engineers and sugar-mill engineers.

Let us now examine some practical applications of the principles involved. The extent to which a worker can move to a different job depends on whether the new job requires similar aptitudes or not. A worker who is proficient at his own job can move fairly readily to an occupation requiring similar skills, but mobility is much less marked between jobs requiring different qualities. And movement between places it not usually easy. The greater the distance involved and the more different the conditions between the two places, the more difficult it becomes for labour to move. We may notice, too, that movement is more likely to take place among young people than among old. The latter are more set in their habits and have fewer years to recoup themselves for expenditure involved in moving. Furthermore, other things being equal, the employer prefers the younger man.

Under present conditions, changes in demand and in technical knowledge are constantly taking place, and they provide incentives for labour to move between occupations and industries and places. On the other hand, there is an increasing tendency for the State and the trade unions to prohibit or restrict entry into certain industries or trades. Entry to most occupations, even non-professional ones, requires the production of certificates indicating the level of education attained, or the success achieved in some training project. Some firms require not only written evidence of general competence but also an undertaking, on the part of the applicant for a job, of his intention to continue studying. Mobility of labour is frequently hindered by shortage of suitable housing or other accommodation which will suit both the requirements and the purse of the man

contemplating the move. This applies particularly to workers with school-going children. Unemployment benefits sometimes reduce incentives to movement. Hence movements of labour do not take place with sufficient readiness to bring about a complete adjustment to changes in economic conditions.

Nevertheless the mobility of labour is sufficient in most countries, to make possible a large measure of adjustment in response to changes in conditions. As a rule such changes require that only a very small proportion of the total labour force should move, and such movements may in the long run be effected. An adjustment between areas may take place by a kind of "reshuffle". Suppose a movement of population is required from the north of a country to the south. This could be brought about by a series of comparatively small movements constituting a general southward trend - those in the north moving to the north midlands, those in the north midlands moving southward, and so on. Similar principles might be applied to movements between occupations - each movement being to an approximately similar occupation, provided a range of similar occupations exists - localisation of industry may prove a stumbling-block to uninhibited movement of labour, except, of course, contract or seasonal migrant labour.

The main influence facilitating mobility between occupations and industries, though not so much between places, is the change in the personnel of the working population, which is continually being reduced by deaths and retirements, and increased by boys and girls

entering the labour market from school. It is often wiser to decide to enter a certain occupation when leaving school than it is to leave an occupation later, and start afresh in another. Hence the new entrants to the labour market tend to be absorbed into those occupations which offer the best prospects. Here the State can do much by means of employment exchanges, vocational tests, etc.

From this it follows that where the population is expanding adjustment is facilitated and can be brought about mainly by diverting the stream of new entrants towards those fields which are expanding without many established workers having actually to change. A stationary, or, still more, a declining population, hampers adjustment since it must take place largely by workers leaving one kind of job and moving to another. Many countries have been handicapped in this respect by the slowing-down of the birth-rate, particularly among the more intelligent.

In the geographical sense land is obviously the most immobile factor of production, labour is immobile in that a man cannot in any way be separated from the work that he does. His labour is an inseparable part of the worker, and not only may the worker find difficulty in changing his occupation on account of his abilities and aptitudes, but also when he gets an opportunity of doing so his preferences may prevent him from taking this opportunity.

2. Efficiency of labour:

The efficiency of the labour force of a country depends largely upon the following factors:

(a) Health and strength:

These are very important factors in productivity especially in certain unskilled occupations (such as digging trenches, or collecting the

community's refuse) or where the flow of continuity of the job is of importance.

(b) Intelligence:

This is of particular importance in the case of skilled labour. Intelligent labour is economical to the employer and needs little supervision.

(c) Climate and other physical conditions:

Extremes of heat and cold are both detrimental to great efficiency. The most progressive lands are the temperate regions, largely because the climate is conducive to hard work and although man's efforts receive a reward, this is only to be obtained by steady application.

(d) Education:

Education, both general and technical, is a factor of great importance. Expenditure on education is not only socially desirable, but also an excellent investment from the business point of view.

(e) Productivity:

The productivity of the worker depends on several things: his intelligence, which is usually, though not invariably, reflected in the standard of education attained; his aptitude for the job, and his application of it; his general attitude to the disciplines of work, and so on. All these things are just as much part of a man as his health and his strength, and all add their measure to his efficiency. But the continued efficiency of the worker depends to a great extent on the wage he receives, the return for his labour.

In this connection the real value of the wage is the important point. Wages are determined largely by the worker's productivity, hence the greater the output the higher the wage, and the worker is thereby enabled to spend more on the necessities of life, and his efficiency is thereby increased.

(f) Working conditions:

Productivity may be increased if conditions of work are favourable. Good light and ventilation are essential; undue or uncontrolled noise inhibits concentration etc.

(g) The length of the working day:

Man is not an automaton, and continuously long hours have a harmful effect on the worker; his efficiency is apt to decline, not only during the latter part of the day but during the whole working period, for one's span of concentration has definite limits.

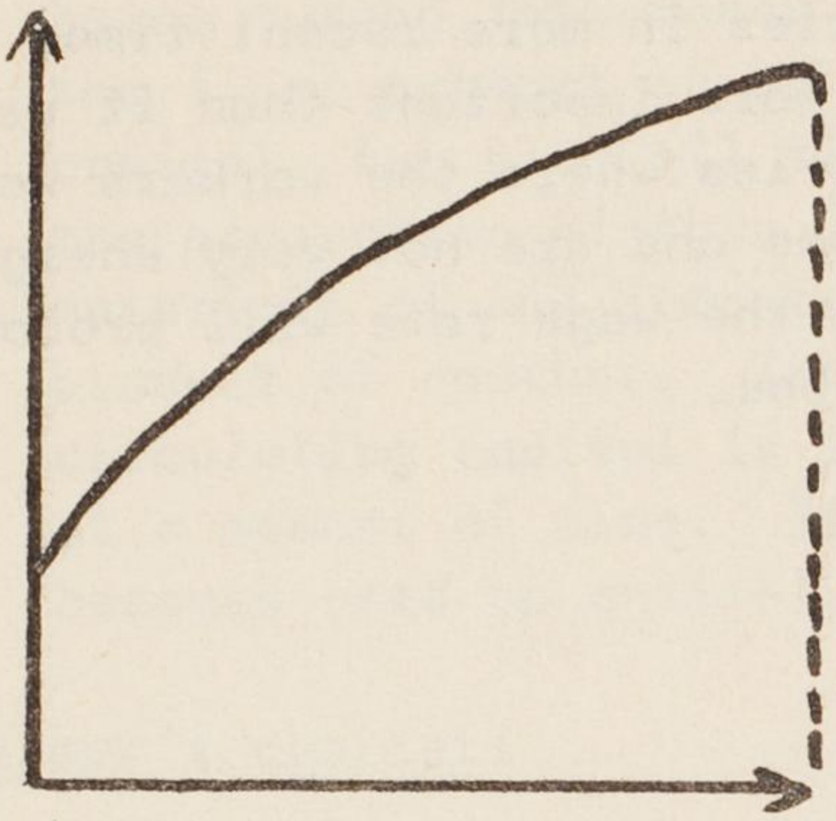
(h) Social conditions:

The contented and satisfied worker is always willing to do his best and requires little supervision if he is working in a milieu where he feels he "belongs".

(i) The organisation of labour:

An industrially developed country which makes the maximum use of division of labour will derive a greater output from its labour force than a country which has a labour force of the same size and strength but does not adopt specialised methods.

(3) Supply curve of labour:



The supply curve will normally slope upwards from left to right, reflecting the direct relationship between the price of labour (wages and salaries) and the quantity of new employment. As wages increase, so too, do the hours offered by labour, and the lower the wages, the lower the work hours offered. However there exist both upper and lower limits.

The short-period supply curve will always slope upwards; the long-period supply curve may slope upwards or downwards or be horizontal.

Other considerations complicate the question of the slope of the supply curve of labour. Willingness to work will affect the slope. Is the man willing to work more with an increased wage rate or not? This depends on whether he wishes to earn a greater income at the expense of his leisure. He may prefer a smaller income but more leisure. This factor will cause the curve to slope upwards or downwards.

If the workers prefer more leisure along with an increase in wages, the output declines. But usually it is assumed that an increase in the wage rate is an incentive to increased output.

The supply curve of labour determined by both ability and willingness to work is assumed to be upward-sloping.

In advanced communities in more recent times leisure has been considered more important than it used to be. In undeveloped countries where the workers want only to have a fixed income and are not very energetic or ambitious, a rise in the wage rate will probably lead to less work being done.

D. CAPITAL

1. Introduction:

Land and capital may be distinguished on the following grounds:

(a) Land is a gift of nature, while capital is a product of labour.

(b) Land is permanent, while capital depreciates.

(c) Land is fixed in quantity while capital is reproducible.

2. Capital has serveral forms:

(a) Producer's capital:

This is capital which is used in the process of the production of goods, and itself may take one of the following forms:

(i) Fixed capital, which is the term given to durable instruments of production such as factories, machinery, plant and other equipment which is used again and again in the process of production. This type of capital yields a flow of services over a period of time, such period being regarded as its "life".

(ii) Circulating capital, which is the term given to all those intermediate goods which are constantly being turned into money. Not only must we regard the final product of an industry as being circulating capital, but also all the raw materials used in the production of this final product, for the raw materials of one industry may be the finished product of another. The essential feature about circulating capital is that it yields its service at a moment of time. It is not durable but becomes used up entirely at one operation.

(b) Consumer's capital:

This term is given to goods which satisfy the consumers' wants directly, such as houses, clothes, food, to mention only a few.

A country's capital may include not only the labour force but the buildings, machinery, raw material supplies, tools and equipment, and transport and communication facilities which add to its powers to produce wealth. They are real things. The volume of output of a community is influenced by the amount of such capital it possesses. It is the possession of capital which enables the workers in the United States or the United Kingdom to produce so much more per person than the workers in a less developed country like Burma.

3. Capital is accumulated when production exceeds consumption:

If the total output produced were consumed, there would remain no accumulated results of past labour. Accumulation of this type can take place only if those who contribute to production postpone the consumption of part of their shares in the total product. When consumers "wait" in this way, they are said to save.

The accumulation of capital depends first, then, on the power to save. It depends secondly, of course, on the will to save.

(a) The power to save:

The power to save depends on an excess of production over consumption.

(b) The will to save:

This is more a personal matter and depends upon:

(i) Security: Little will be saved unless it is certain that wealth saved will be protected against theft or fraud.

(ii) Foresight: A prudent man will set aside something for himself and his family for the future.

(iii) Ambition: The stronger the ambition, the greater is the desire to accumulate capital.

(iv) Facilities for investment: The accumulation of capital will be the greater if there are adequate means of saving, i.e., if there are concerns where a man's savings can earn interest.

(v) The rate of interest: The amount saved depends largely on the anticipated return. The payment for the use of capital is called "interest". A high rate of interest is usually a direct encouragement to save.

4. Capital is mobile:

Capital, even if invested in fixed assets, is rarely completely immobile because buildings and machinery adapted to the production of one product may usually be fairly easily converted to the production of at least one other product. For example, a building designed for

flats may subsequently be converted into a hotel, while a motor factory may produce armaments, as happened in Germany before World War II - Germany's "guns or butter" period.

Capital in the form of cash may be regarded as highly mobile, and in the sense that the profits and retained earnings derived from capital assets may be re-invested in some other type of undertaking, even these assets may be regarded as mobile over a long period.

E. ENTREPRENEUR

The business world is full of uncertainties about future prices, quantities demanded, resource costs, and new techniques. There are opportunities to be seized in meeting emerging demands, in taking advantage of new resources, and in testing technical innovations. And there are risks of being wrong, of losing time and wealth - even of going bankrupt. Profits can be considered the economic reward for innovation, enterprise, and risk taking. The enterprising people who face these uncertainties head on are called entrepreneurs.

The function of the entrepreneur is to bring together the factors of production and set them into motion; he organises the whole process of production, from the purchase of the raw material to the sale of the finished article.

In instituting production the entrepreneur utilises land for building purposes, translates his monetary capital into productive capital in the form of buildings, machinery and raw materials; and organises the labour force. He has to make decisions as to the method of production, the scale of production and the degree of division of labour to be introduced, the nature, quality and quantity of the product. He has to provide for the payment of the costs of production and the marketing of the finished product.

His position demands, therefore, a number of varied qualifications. The purchase of raw materials involves a knowledge of markets and sources of supply and a close acquaintance with the nature of the commodities dealt in, while successful selling also requires a wide knowledge of markets and market conditions. In addition, he must have high qualities of personal leadership and judgement, as well as technical knowledge and directive ability.

An important feature of the entrepreneurial function is the bearing of risk. These risks are many and varied, and are an unavoidable feature of production carried out in advance of demand. On the side of demand there is the constantly varying human element to be considered - wants and desires are always fluctuating, and, though habits change but slowly, the anticipation of the many forces which affect demand is a highly complex problem. No less important is the side of the supply, and here the risk becomes greater the more the goods resemble raw materials, for the supply of such goods is largely dependent on the vagaries of nature, as well as the state (for importers of raw materials) of international co-operation.

Changes in fashion and the introduction of new inventions by competing businesses are possibilities he must always bear in mind.

Having employed land, labour and capital in production, the organiser has to distribute to each its share of the final product. He remunerates each of the factors of production, paying rent to the landlord, interest to the investor and wages to the labourer. The balance left over is the reward of the entrepreneur himself.

His reward includes remuneration for the numerous functions he has performed and may be divided into payments for:-

(a) Wages of management. (This will depend on the extent to which the entrepreneur personally undertakes the ordinary labours of management).

(b) Remuneration for risk bearing, and

(c) Profit. This is the residue remaining after paying (a) and (b) and all the costs of production. The measure of the success of the entrepreneur is the amount of reward he obtains in this final sense.

F. OUR PLAN OF STUDY

At this point it is a good plan for us to pause for a while to take stock of how far we have come, and where we are going. We have seen that economic activity is based upon the existence of scarcities. The overall economic problem is the production of goods and services with resources which are in limited supply. Economic organisation is the manner in which society adapts itself to solving the fundamental economic problem. The limited amounts of land, labour and capital are combined in various forms of industrial and business undertakings to produce goods and services for the community, but these production activities are subject to changing costs and to the law of diminishing returns. In our Western capitalist democracies, these production enterprises are organised by private persons acting individually, or collectively as partnerships or joint stock corporations, and also by State and municipal bodies. In some countries production is planned and supervised by State authorities and the production system is then described as a planned economy.

The owners of the various factors of production are entitled to claim a reward for any successful contribution these factors make to production, whether they are used by the owner of the factor, or lent by the owner to others to use. Thus, the owner of labour receives a wage if he sells his labour to an entrepreneur; if he works on his own he receives an income from the sale of the product of his work. A land-owner

receives rent if he leases his land to a farmer; if he cultivates the land himself, he expects the product to yield him an equivalent to the rent he could have obtained by leasing the land to somebody else. Again, a man who owns capital lends it at interest, or expects to receive the equivalent if he uses the capital himself. The entrepreneur, who contributes organisation, receives profit if he assumes risk successfully, and accurately assesses the market.

In a money economy, these rewards are distributed as money; but since these money rewards enable the recipients to buy a share of the finished product, we can imagine that what is really happening is that the product itself is being distributed. For this reason, that section of Economics which deals with the allocation of rewards to the factors of production is generally known as Distribution. (Note that this has nothing to do with Distribution in the commercial sense --- namely of delivery products from manufacturers to wholesalers, retailers and consumers).

Now since future production depends on entrepreneurs' estimates of the way in which consumers will spend their incomes, and since these incomes are really the result of past and current production, Production and Distribution are really two mutally interdependent economic processes, both going on at the same time. Although we study them in isolation i.e., separately, therefore, you must remember all the time that they are not separable in practice.

In the next group of lectures we shall study the way in which the disposal of income (i.e., the rewards of factors of production) influences the decision of entrepreneurs. After that we shall see how the rewards of the factors are determined; how the rewards react on the decisions of entrepreneurs, and how the decisions of the entrepreneurs at the same time affect the owners of the factors. Throughout these investigations, we shall make free use of diagrammatic method.

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SUMMARY

MOBILITY OF THE FACTORS OF PRODUCTION

A given factor may change its contribution to the final product in either of two ways:-

(1) It may render the same service as before, but may be utilised in a different way.

(2) It may change the nature of its service.

LAND

Economists of the last generation dealt with land as a separate factor of production because, unlike labour and capital, its supply was rigidly fixed. It was not man-made, but made by God. They also referred to differences in fertility and situation. Modern economists consider supply for a purpose rather than total supply and, according to the current theory, each plot of land should be regarded as a separate factor.

LABOUR

Peculiarities in the supply of labour are:

(1) A man's labour is part of himself and he must deliver it himself.

(2) Labour power is perishable and cannot be stored.

(3) Individual workers are at a disadvantage in bargaining.

(4) Cannot be increased quickly.

(5) Labour is relatively immobile.

The efficiency of labour force depends upon:

(a) Health and strength.
(b) Intelligence.
(c) Climate and physical conditions.
(d) Education and technical training.
(e) Productivity.
(f) Working conditions.
(g) Length of the working day,
(h) Social conditions; and
(i) Organisation of labour.

Mobility of labour:

(1) Geographical --- from place to place.

(2) Vertical --- from one grade to another.

(3) Horizontal --- between trade and trade in the same grade.

CAPITAL

Distinctions between land and capital are:

Land	Capital
Gift of nature. Made by God.	Product of labour. Made by man.
Imperishable.	Used up and must be replaced.
Fixed in quantity.	Is reproducible.

Various types of capital are: Producer's --- Fixed
Consumer's

The formation of capital:

(1) Combined result of past labour and savings.

(2) There must be a surplus (i.e., power to save).

(3) Will to save --- Security
Foresight.
Ambition.
Facilities for investment.
Rate of interest.

--oOo--

PROGRESS QUESTIONS

1. Do you consider that the following persons are productive workers?

   (a) A Member of Parliament.

   (b) A housebreaker engaged upon the demolition of a city building.

   (c) A munition maker.

   (d) A soldier.

   (e) A domestic servant.

2. What is capital? Explain its origin, nature and function. Give examples of different kinds of capital and their respective services. Is all capital material and concrete?

3. Explain the importance of the various factors of production in the economy. Relate your answers to the Republic of South Africa.

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GUIDES TO THE ANSWERS

QUESTION 1.

In order to decide whether the services mentioned in this question are productive or not, you must examine them to see whether utilities are produced.

(a) Members of Parliament are able to render very great services to the country. Through legislation of an economic character, such as taxation and by the provision of good government giving both security and stability, they influence economic activities. There is a strong demand for their services and in most countries they render them for reward. Even where there is no direct monetary reward the improved social status which an M.P. attains may be considered a reward for his service.

NOTE TO STUDENT. When anticipated pleasure is the motivating force leading to the effort, it cannot be ranked as productive labour. It is recreation. In the case of the M.P. giving his service free of remuneration, a sense of duty and a desire for social position are the main incentives; the pleasure derived from the work is secondary.

(b) The Housebreaker's work is apparently destructive, but really productive, since he is presumably engaged upon the demolition of a building which no longer serves its purpose. He is satisfying a want; there is a demand for his services in order that a more efficient building may be erected upon the cleared site.

(c) Munition Maker: Although munitions are made with the primary object of destruction, the actual manufacture of munitions cannot be described as unproductive. Even while the munitions remain unused they serve the purpose of giving a feeling of security. There is a need for security and the production of munitions is effort consciously and deliberately undertaken for the purpose of satisfying that need. The economist is not concerned with the moral aspect;

if the work achieves its purpose it must be ranked as economically productive.

From the point of view of the world as a whole, the manufacture of these munitions represents unproductive labour, but from the point of view of the nation making or using them, it is productive labour.

(d) A Soldier: The labour of a soldier must similarly be regarded as productive, because his labour affords national security under which productivity thrives. If the military classes were to extend out of all proportion to the number of civilians, however, their labour would be unproductive for all labours are unproductive which are maintained to the disadvantage of others.

(e) A Domestic Servant: Adam Smith regarded domestic service as unproductive labour because it did not result in the creation of or a change in form of commodity. Modern economists, however, do not recognise such a distinction. They maintain that all labour which is undertaken for reward is productive. There is a demand for domestic servants and people are willing to pay for them so that their services must be considered as economically productive.

QUESTION 2.

The term capital has a variety of meanings, depending upon its context. In one sense it implies a stock, or fund existing at a given moment, as opposed to income which is a flow over a certain period. In another sense it implies factors of production which are the result of past efforts as opposed to others which are the gift of nature (such as land) or are linked with present efforts (such as labour). In the accountancy sense, capital suggests the money fund which is used to buy productive assets.

Capital originates in an excess of production over consumption. If the total output produced were consumed, there would remain no accumulated results of past labour. Accumulation of this type can take place only if producers (or other members of the community) postpone the consumption of part of their shares in the

total product. Capital includes, therefore, produced means of production such as factories and machinery and railways, together with raw materials and semi-finished products in the process of being transformed into finished commodities.

The function of capital is to enable production to be carried on. This is nowadays a lengthy process and capital enables producers to tide over the period between the making or extracting of the product and its final consumption. It has been said that "Futurity is the fundamental idea underlying capital". Land and Labour are the two prime or "original" factors of production, but with these alone man cannot progress very far. At an early stage he finds the need for implements to help him, which not only increase his productivity but enable him to satisfy more diverse needs with greater ease. Such wealth used to produce further wealth is called capital. Some of the difficulties in connection with the definition of capital have already been pointed out. For the present, then, it will be sufficient to note that capital is all wealth other than land which is used in the production of further wealth. Capital must be the result of past labour and for this reason it is sometimes referred to as "crystallised labour".

The various kinds of capital are given on pages 6, 7 and 8 of this lecture.

Producers' capital clearly promotes production, whilst consumers' capital subscribes to the satisfaction of wants. Examples of each type are given in the lecture.

Another common classification of capital is into "personal" and "national". In the former are included all forms of private property which aid production and yield a revenue to the owner. "National" capital refers to such national assets as rivers and forests which may have been improved by man but not taken into private ownership.

It cannot be said that all capital is material or concrete. A man who saves in order to acquire an advanced education is in effect, investing. He is foregoing present consumption in order to acquire the asset of increased ability; the return from his investment will be the higher wages or salary he earns in the future.

QUESTION 3.

There are notes on all the factors of production in the lectures, but it is useful to note to make your answer more interesting, that recent statistics suggest that labour is the most important single factor of production from the point of view that without labour there could not be any production. Similarly, capital is exceedingly important, because without capital the total product would be very small.

In a realistic sense, raw material resources are also important, and with these the Republic of South Africa is well endowed, the significance of gold in the development of our country, for example, needing little emphasis. However, great attention these days is paid to the rate of economic growth. And this depends to a large extent upon the use of improved techniques and skills. A country such as South Africa cannot rest only on its resouces of materials and labour; it must apply improved methods to maintain a rate of economic growth of not less than one and a half percent, per year, which is considered to be a reasonable average. Thrift on the part of the community can also play its part, since this increases the volume of capital and the contribution which capital can make to total output.

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USE THIS PAGE FOR MAKING NOTES

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TEST LB2

(Time Allowed : 3 hours)

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NOTES:
1. Credit will be given for neatness and method.
2. Answer ALL questions.
3. Scale of marks is indicated at the end of each question.
4. Leave sufficient space at the head of your answer paper for tutor's comments.
5. Answer each question on a separate sheet of paper.
6. Attach this entire question paper to your answers.
7. PLEASE FILL IN STUDENT DETAILS ON THE FORM AT THE END OF THIS TEST AND ATTACH IT TO YOUR ANSWERS.

------oOo------

QUESTION 1.

Discuss the function and reward of the entrepreneur in modern industry. (20 marks)

QUESTION 2.

State the advantages which large industrial organisations tend to reap in respect of the purchase of their requirements of raw, semi-manufactured and finished materials. Are there any disadvantages? (20 marks)

QUESTION 3.

"Progressive division of labour results in the lengthening of the chain of production" (Jones). Explain the meaning and significance of this statement. (20 marks)

QUESTION 4.

Describe the Law of Diminishing Returns. Show why you consider it is, or is not, of much importance. (20 marks)

QUESTION 5

In business "bigness is best". Critically discuss this statement.

(20 marks)

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------oOo------

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